Conference Proceedings
Abstract

The Hawaii Coastal Zone Management Act was passed in 1977. Like the federal Act, the State law contains a number of wide ranging objectives and policies. These are intended to guide the conservation and development of land and water resources within the coastal zone in light of competing demands for limited and sensitive coastal resources. The policy focuses on recreational, historic, marine, scenic and open space resources, beach protection and accessibility, coastal ecosystems, economic uses, managing development, public participation and coastal hazards. Hawaii’s designated coastal zone includes all land areas of the state and extends seaward three miles. A major component of law is that it delegates responsibility for implementation to each County through “home rule”. Using geographical overlays of Special Management Areas and Shoreline Setback Areas, each county play’s a pivotal role in the implementation of the state’s Coastal Zone Management Program. The Special Management Area is a subset of the coastal zone and includes all lands and waters beginning at the shoreline and extending inland for a minimum of 100 yards. All proposed structures and activities within the SMA are assessed in relation to the objectives of the law. In contrast, the Shoreline Setback Area enhances regulatory control over activities that are in very close proximity to the ocean. Any new structure within the SSA, and in particular shoreline hardening structures require a variance from regulatory prohibition that is approved by the Maui County Planning Commission. These concomitant geographic overlays, SMA and SSA, are geographically based land use tools designed to provide each county with regulatory control over development within the coastal zone. The efficacy of the program is discussed with recommendations for improvements and new directions in coastal management.

Introduction

The United States Congress enacted the federal Coastal Zone Management Act in 1972. The federal law was later reauthorized in 1980. The National Oceanic Atmospheric Administration (NOAA) administers the federal coastal zone management program and evaluates each participating State’s program at regular intervals to ensure consistency and allow continued federal financial support for coastal projects and programs. To date, 34 of 35 eligible States have federally approved coastal management programs and receive a range of funding.

To comply with the U.S. Coastal Zone Management Act (42 USC), the Hawaii State Legislature passed the Hawaii Coastal Zone Management Act in 1977 (Hawaii Revised Statutes, Chapter 205A or HRS 205A). Hawaii’s designated coastal zone includes all land areas of the state and extends seaward three miles to the limit of the state’s jurisdiction (OCRM, 2003). Originally, the coastal zone only included the land area of each island and excluded forest reserves. However, in 1983, Act 124 expanded the coastal zone three miles seaward to include all waters under the state’s jurisdiction. Furthermore, in recognition of the adverse impacts on coral reefs and near shore waters from non-point source runoff, Act 91 passed in 1993, included forest reserves in the
coastal zone. Thus in 1993, Hawaii designated the entire state and its near shore waters to be subject to the Coastal Zone Management Act.

Like the federal Act, the state law contains a number of wide ranging objectives and policies (HICZMA, 1978). These are intended to guide the conservation and development of land and water resources within the coastal zone in light of competing demands for limited and sensitive coastal resources. Table 1 illustrates the major policy areas addressed by the Hawaii Coastal Zone Management Act, HRS 205A.

Table 1: HRS 205A Goals & Objectives

<table>
<thead>
<tr>
<th>Recreational Resources</th>
<th>Provide coastal recreation to the public and protect coastal resources uniquely suited for recreational activities that can not be provided elsewhere</th>
</tr>
</thead>
<tbody>
<tr>
<td>Historic Resources</td>
<td>Protect, preserve, and restore Hawaiian and American cultural / historical resources</td>
</tr>
<tr>
<td>Marine Resources</td>
<td>Implementation of the State’s ocean resources management plan</td>
</tr>
<tr>
<td>Scenic and Open Space Resources</td>
<td>Protect, preserve, restore and improve the quality of coastal scenic and open spaces</td>
</tr>
<tr>
<td>Beach Protection and Accessibility</td>
<td>Conserve open space, minimize beach loss due to erosion, preserve public beach access, and protect beaches for public use</td>
</tr>
<tr>
<td>Coastal Ecosystems</td>
<td>Minimize adverse impacts and protect coastal ecosystems</td>
</tr>
<tr>
<td>Economic Uses</td>
<td>Provide for coastal dependent facilities and minimize their negative impacts</td>
</tr>
<tr>
<td>Managing Development</td>
<td>Enhance transparency and streamline permitting / decision-making processes</td>
</tr>
<tr>
<td>Public Participation</td>
<td>Stimulate public awareness, education and participation</td>
</tr>
<tr>
<td>Coastal Hazards</td>
<td>Reduce hazards to life and property by appropriately locating structures away from flood, tsunami, hurricane and erosion zones</td>
</tr>
</tbody>
</table>

Hawaii’s Coastal Zone Management Program

The law also established the HI Coastal Zone Management Program (CZMP) to implement the statutes objectives using a broad management framework that integrates state and county regulatory agencies and provides greater coordination of existing laws (OCRM, 2003). NOAA first approved the Hawaii State coastal zone management program in September 1978 and continues to recommend appropriate Necessary Actions and Program Suggestions on a regularly scheduled basis (ibid.).

Based in the Office of Planning, the CZMP administers the programs federal financing and ensures that other state agencies comply with CZM law for projects and activities that fall within their jurisdiction. State agencies such as the Land Use Commission, the Department of Lands and Natural Resources, Department of Health, Department of Transportation and Department of Agriculture are frequent participants in the CZMP (ibid.).

The County’s Role

A major component of Hawaii’s Coastal Zone Management Program is that it delegates responsibility to each county through home rule. In this manner, the county’s play a pivotal role in implementing the program objectives. Using geographical overlays of Special Management Areas and Shoreline Setback Areas, each county regulates
developments that are in proximity to the ocean through a permitting and assessment system.

**Special Management Areas**

Passed in 1975, Act 176 created Special Management Areas that were a subset of the State’s coastal zone. The SMA included all lands and waters beginning at the shoreline and extending inland for a minimum of 100 yards (HICZMA, 1978). In 1977 and 1979, Act’s 188 and 200 allowed each county to expand its SMA boundary further inland. The Act’s substantially expanded each county’s ability to control land use near the ocean, but not within the ocean since that is under the state’s jurisdiction and control. Maui County expanded its SMA inland to the nearest state highway (Figure 1). There were three reasons for using this somewhat arbitrary line as the SMA boundary. First, since views to the ocean are protected under HRS 205A, it seemed prudent to protect views from a state-jurisdictional area, namely state highways. Second, the state highway was easily to delineate on maps. Third, the highway is recognizable to the public and helps in determining if an SMA permit is required.

No development, as defined in HRS 205A, is allowed in the SMA without a permit issued by the county (ibid.). Each county reviews development proposals in light of the potential for adverse impacts on coastal qualities and the ten objectives stated in the Coastal Zone Management Act. Through the permitting process each county can regulate development by placing conditions on the proposed development. These conditions are intended to avoid, mitigate and/or minimize adverse environmental impacts in the SMA while conserving valued coastal qualities and amenities (SMA Rules, 2003). In sum, the permitting process sets conditions before the development is allowed to proceed in order to comply with the objectives described in HRS 205A.

![Figure 1: The Special Management Area of Maui Island is shown in red.](image)

**Shoreline Setback Areas**

The State requires minimum setbacks for structures located on ocean front properties. Originally based on the Shoreline Setback Law, Act 258 incorporated the shoreline setback requirements into the Coastal Zone Management Act in 1986. These setbacks range from 20 to 40 feet from the shoreline, depending on the average depth of a lot or parcel. Similar to the SMA boundaries, each county may increase the landward extent of the shoreline setback area. Maui County’s shoreline setback area consists of an erosion
based setback, or 25% of the average lot depth, or the overlay of the two, whichever is the greater (Figures 2 and 3). The intent of the expanded SSA is to protect structures from coastal hazards for fifty years, based on historic erosion rates developed for the sandy shorelines of Maui Island (Norcross-Nu’u and Abbott, 2003).

Similar to the SMA permitting and assessment system, each county regulates what structures and/or activities are allowed in the Shoreline Setback Area (SSA). In Maui County, any new structure proposed on ocean front property must undergo both an SMA and an SSA assessment. Only minor activities and/or removable structures are permitted within the shoreline setback area. Any new structures and/or proposed activities must be assessed to ensure that coastal amenities and shoreline access for the public are preserved. A Shoreline Setback Approval applies to those activities and/or structures that are explicitly allowed in the setback area. A Shoreline Setback Determination indicates that shoreline setback area is properly and correctly calculated. A Shoreline Setback Variance is required for those activities and/or structures not permitted. For example, most hardening structures such as seawalls, geo-textile sea bags, groins, and revetments may require a variance from regulatory prohibition that is approved by the Maui County Planning Commission (OCRM, 2003). Shoreline permits, like SMA permits, may include certain conditions or requirements before the proposed structure and/or activity is allowed to proceed.

![Hypothetical erosion rate: 2.0 ft per year x 50 yrs = 100 ft](image)

**Figure 2.** Erosion rate based setback calculation consists of 50 x the annual erosion hazard rate plus a 20 ft buffer.
Figure 3. State certified shoreline (red-left), average lot depth setback (red-right) and erosion rate based setback (gold-far right) calculations shown on project site plan, along with topography and proposed / existing structures.

Land Use Overlays

These concomitant geographic overlays, SMA and SSA, are geographically based land use tools designed to provide each county with regulatory control over development within the coastal zone (Davis, 2003). By assessing development proposals in the context of the goals and objectives of the Coastal Zone Management Act, the state and counties attempt to sustain the Island’s unique resources, qualities and amenities within the coastal zone. This in turn provides adherence with Section 312 of the federal Coastal Zone Management Act, whereby NOAA’s Office of Ocean and Coastal Resource Management (OCRM) conducts continuous performance reviews of the state’s CZM programs for compliance with federal law and mandates.

Outcomes of the Assessment Process

The processes whereby “development” and “not-development” may occur in the SMA and SSA are defined in state law and county rules. First, state law HRS 205A defines what is, and is not, development. Second, county rules §12-202 and §12-203 describe what is permissible and prohibited in the SMA and SSA. The county has five categories namely; In Assessment, Exempt, Emergency, Minor or Major (Table 2).

Maui County conducts an assessment (i.e. SMX) of all proposals that fall within the SMA. The assessment evaluates what impact, if any, the proposal may have on coastal resources. The assessment also determines whether the proposal constitutes “Development” or “Not Development” based on a variety of criteria. For example, Maui
County considers the impacts of a Major proposal on community and public facilities, traffic congestion, water service, school facilities, fire protection, parks and recreation, police service and affordable housing. This system allows a proposed use, otherwise permitted by zoning, to be reviewed for consistency with other applicable land use plans and policies.

An SMA Exemption (SM5) may be issued for those activities and/or structures that meet the definition of ‘not development’ and have no environmental or cumulative impact on coastal resources. In contrast, the other three permit categories listed in Table 2 are considered ‘developments’ and may be issued conditional permits.

An SMA Emergency permit (SM3) may be issued by the Director of Planning when structures or public safety are immanently threatened. An SMA Minor permit (SM2) may be issued by the Director of Planning for projects costing less than $125,000. The minor permit may have conditions attached, but does not require a public hearing. Those projects or proposals in excess of $125,000 or that will have adverse coastal impacts are required to obtain an SMA Major permit (SM1). Approval of an SMA Major rests with the Maui Planning Commission rather than with the Director of Planning and entails a public notification process. The Commission may impose significant conditions and/or limitations on the project, receives testimony about the project through public hearings, and has publicly recorded deliberations regarding the project.

<table>
<thead>
<tr>
<th>Year</th>
<th>SMA Assessments</th>
<th>Major Permits</th>
<th>Minor Permits</th>
<th>Emergency Permits</th>
<th>Permit Exemptions</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006*</td>
<td>256</td>
<td>10</td>
<td>60</td>
<td>1</td>
<td>72</td>
<td>399</td>
</tr>
<tr>
<td>2005</td>
<td>650</td>
<td>39</td>
<td>172</td>
<td>1</td>
<td>172</td>
<td>1034</td>
</tr>
<tr>
<td>2004</td>
<td>892</td>
<td>27</td>
<td>132</td>
<td>3</td>
<td>144</td>
<td>1198</td>
</tr>
<tr>
<td>2003</td>
<td>793</td>
<td>24</td>
<td>195</td>
<td>1</td>
<td>134</td>
<td>1147</td>
</tr>
<tr>
<td>2002</td>
<td>724</td>
<td>23</td>
<td>59</td>
<td>1</td>
<td>35</td>
<td>842</td>
</tr>
<tr>
<td>2001</td>
<td>98</td>
<td>15</td>
<td>60</td>
<td>0</td>
<td>4</td>
<td>177</td>
</tr>
</tbody>
</table>

Note: the number of assessments does not equal the sum of all permits issued due to Lanai and Molokai Island permits, incomplete assessments, and permit denials.

The outcome of the SMA assessment and evaluation process may be the imposition of certain conditions before the development is approved and allowed to proceed. These conditions are intended to avoid, mitigate and/or minimize any negative impacts that the proposed development activity may have on coastal resources (HI Supreme Court, 1985). All developments are subject to conditions that ensure adequate access to beaches, recreational areas, and natural reserves, ensure sufficient provision for treatment of wastes and pollution, and ensure that new structures cause minimal adverse effects to coastal resources and are sufficiently protected from ocean-related damages such as erosion and flooding. No development is allowed if it will have a substantially adverse environmental / ecological effect, or is inconsistent with government policies including SMA guidelines, County General and Community Plans and County Zoning (SMA Rules, 2003).

The county is authorized by HRS 205A to permit development that meets the above criteria, so long as dredging, filling and coastal alterations are minimized, beach sizes and
public access are maintained, the line of sight to the sea from the nearest State highway is not diminished, and adverse affects to water quality, fisheries, wildlife, habitat, and agricultural uses are minimized (OCRM, 2003). In sum, the process is intended to make decision-making more rational and predictable, while increasing transparency to the public. Thus, the implementation of a conditional permitting system and an assessment process to determine if a proposal is development or not is meant to provide for the sustainable development of Maui’s coastal and natural resources

Discussion

Maui County’s method of assessing a proposal before allowing it to proceed provides significant regulatory control over development in proximity to the ocean. However, it does so at the cost of lost efficiency and reductions in the timely approval of permit applications. Many assessments may be unnecessary in light of coastal resource protection. A more efficient method of evaluating proposals would be to utilize a weighted indicator checklist. Such a list could provide useful indicators of potential adverse coastal and environmental impacts. For example, the amount of increased impervious surface resulting from a proposed project would be an indicator of potential runoff from a site and may indicate adverse impacts to coastal waters. The list of indices should be based on thresholds, and where possible, be resource specific. For example, studies have shown that impervious surface cover of 50% or greater results in exponential levels of sheet flow runoff. Further, high levels of runoff are associated with impaired near shore water quality. In order to establish these thresholds, Planning Department staff should meet with technical experts and those having jurisdictional responsibility for each of the CZMA objectives. To illustrate, the US Fish & Wildlife Service (USFWS) is responsible for protection of endangered species, which is one of the ten objectives of CZM law. USFWS personnel can provide quality information on the location (GIS databases), frequency, life history (breeding grounds, foraging areas, etc.), and habitat needs of endangered species. Maps of critical habitat for listed species are also available from USFWS as a GIS overlay. For example, filling a wetland in Kihei that is a known breeding ground for the Hawaiian Stilt would likely exceed endangered species protection thresholds. Thus, indices could be developed that reflect both jurisdictional responsibilities and whether a proposed project would have improbable, possible, or likely adverse impacts on endangered species.

To implement, a proposed project would be reviewed by planning staff using the checklist. Each indicator would receive a score of 1 to 10 based on recommended thresholds, GIS databases, and land use information. Scores would be summarized to indicate either improbable, potential, or likely adverse impacts. Those with low scores would be provided an SMA exemption, those with medium scores could receive assessment and agency review of pertinent information, and those with high scores would require a full SMA assessment similar in scope to the existing SMA assessment process. Such a system would streamline the process and expedite timely processing of proposals that are unlikely to have adverse impacts. A weighted indicator checklist approach would free planning staff to focus on projects which may impact coastal resources. Focusing on these latter projects would increase effectiveness because efforts could be focused on redesigning a project to minimize adverse affects on environmental and coastal resources.

Other mechanisms of streamlining the SMA permitting system could also be considered, such as a ranking or listing a range of known activities in a specific area that are both permissible and have improbable adverse impacts on coastal resources. The State Conservation Use Permit system illustrates such a mechanism.

Development Slowdown

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How fast should a permit be processed? If the time was reduced by 20%, would it result in 20% better development, or 20% greater resource protection? Table 2 reflects that permit assessments have skyrocketed since 2001. SMA Major Permits, which require a public hearing, have increased 50% from 23 in 2002 to 39 in 2005. Such severe development pressure begs the question that permit processing times should be slowed down. Taking the time to evaluate each proposal and its cumulative effects, in light of substantial growth, could help ameliorate and prevent adverse impacts in advance of their development. Moreover, such tremendous growth strains government capacity in terms of enforcement. The Maui County Planning Department uses a public complaint system to enhance enforcement capabilities. The Department favors compliance and after-the-fact permits rather than fines and penalties. But with fines low and land values high, such a system may fail to be an effective deterrent to un-permitted activities. Thus, having a system that evaluates and assesses potential adverse impacts of proposed projects and seeks to mitigate those impacts through conditions may be favorable if enforcement and compliance are assured.

Conclusion

Albeit slow, coastal and environmental resources are more likely to be protected and conserved through the existing thorough regulatory permitting system. This paper has highlighted some favorable alternatives such as using an indicator checklist. Such a checklist could be validated by ‘mining’ previous permit decisions made by the Maui County Planning Department. Actual decisions made over the last four years could be compared to predicted decisions using the checklist for activities that are unlikely or have low probabilities of adverse coastal resource and environmental impacts. If the checklist proved significantly effective, a new system that allowed planning staff to focus their efforts on reducing impacts from proposed projects would enhance coastal resource qualities. The Special Management Area process is considered slow by some and thorough by others. The process ensures that projects are reviewed in light of their potential impact to coastal and environmental resources, as well as infrastructure use and congestion. While the system may benefit from an improved indicator-based checklist, the thoroughness of the system ensures that most adverse impacts from proposed developments are mitigated or avoided before they are allowed to proceed. Maui County has been graced with exceptional natural beauty. Our coastlines and mountains attract visitors from all over the world. While there is clearly room for improvement, the Special Management Area and Shoreline Setback permitting processes offer a mechanism to ensure that the rich natural environment and coastal qualities that have blessed Maui’s shores are preserved and protected today and tomorrow for residents and visitors alike.

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Abstract

Guantanamo, Christmas Island, Kish, Niue ... these islands, or island-based locations, exemplify extreme examples of an intriguing dynamic erosion of the boundary-specific model of the modern nation-state. Remote, small in size and population, clearly physically separate from the metropolitan powers which continue to oversee their interests, these islands are not sovereign states, yet have enough jurisdictional autonomy to partly manage internal affairs. They are part of an assorted group of (mainly island) territories around the world today that represent novel departures in governance practices. One zone of contestation lies in the exploitation of “offshoring” strategies – not only in the sense of going beyond the legal conventions of the export-processing, banking and finance industries (which are the known and habitual usages of the term), but also in extending, and perhaps eroding, other central conventions of sovereignty. These include issues relating to human rights, migration, citizenship and identity, which will be the focus of this paper.

This paper looks at the global category of sub-national island jurisdictions (SNIJs) and critically analyses how (1) such SNIJs seek to take initiatives whose intent is to craft, exploit or expand their ‘offshore’ status; (2) how metropolitan states take similar initiatives with respect to islands, tasks that are usually more easily undertaken (or imposed) where such SNIJs are either depopulated or run by military personnel; and (3) how mainlands and islands negotiate the tension that arises when “offshoring” is enhanced, or reduced, by one party to the dismay of the other.

Introduction

St Pierre et Miquelon is the smallest jurisdiction in North America, off the southern coast of Newfoundland, a collectivité d’outre mer of France, with a population of around 6,500. It used to thrive on the cod fishery, before the Canadian government – which controls fish quotas - imposed its cod moratorium on the Grand Banks in 1992. The islands have since fallen into a sullen dependency of transfers from France. Their exclusive economic zone is already quite unique and is completely engulfed by the Canadian one. It is 200 nautical miles deep, but just 10 miles wide – and is known as the baguette. Sitting just beyond Canada’s exclusive economic zone, and under the same continental shelf of which St Pierre et Miquelon are part, may be lucrative and exploitable mineral deposits. Should France lay claim to these waters on behalf of its tiny and remote jurisdiction? There is one hitch: getting to them would require a
‘leapfrog’ from the end of the baguette, over Canadian controlled waters (Law, 2006). This hasn’t been done before.

The situation that St Pierre et Miquelon finds itself in is quite unique; and yet it is also typical of the situation that many of the world’s sub-national island jurisdictions (SNIJs) find themselves in (for overview, see Baldacchino, 2006a). Some are in a chronic dependency with a benign metropolitan power that effectively kills their economy through kindness; but others have managed to deploy their jurisdictional power as a resource, extracting asymmetrical concessions from the metropole and using the resulting political space to carve out a more sustainable economic development trajectory – based on niche manufacturing, tourism, shrewd use of environmental and heritage resources, banking and finance. If one were to sum the manner in which this deployment of jurisdiction takes place, then the concept is that of offshoring: this typically refers to the relocation of business processes to another country, based on comparative advantage. But SNIJs, or the metropolitan powers who oversee them, have taken the practice of offshore to a higher level. The differential use of legislation means that these small island territories behave as if they were another country, even though they are not sovereign and thus lie within the purview of a larger, sovereign state. They gamble with claims for specific deals – some, as in the case of St Pierre et Miquelon, quite innovative in governance terms - even in this current age of rampant liberalization and globalization, because they are small and hope to be able to get away with it. And sometimes they do.

**Sovereignty Showing Cracks**

The Treaty of Westphalia (1648) is crucial in the history of international political relations since it forms the basis for the modern international system of independent nation-states. It ushers the beginning of an international community of law between sovereign states of equal legal standing, guaranteeing each other their independence and the right of their peoples to political self-determination. The two most innovative principles being proclaimed were the principle of sovereignty and the principle of equality among nations.

Sovereignty implies legitimate authority over a specific territory, and the exercise of such authority over the residents of that territory. This means that the continental world can literally be “carved up” between contiguous “states”, while the UN law of the sea allows an extension of such principles over large portions of ocean, measured outwards from land. As long as sovereign states respect each other’s sovereignty, the stage is set for long-term political stability.

But there are serious cracks in post-Westphalian governance practices today. They are mainly due to two dynamics: the first is ‘from the outside in’: the pressure and challenges of globalization and global competition oblige and encourage states to determine new, often ingenious, ways of exploiting niches of opportunity or of protecting themselves from economic liberalization; the second is ‘from the inside out’: the bolder assertion of new ‘sovereign’ claims by ‘nations’, which need to be accommodated preferably without threatening the solidity and territorial integrity of the current state. The outcome of these ‘pincer-effect’ dynamics is often found in
expressions of creative governance: unique arrangements between a big player and much smaller player (or players) within the recognized administrative competence of the same sovereign power. These arrangements lead typically to negotiated details of some form of federative or federacy arrangements, including a plethora of ‘non-state’ jurisdictional expressions, that allow for a modicum of both shared rule and self-rule. Many of these ‘governance anomalies’ – anomalous certainly from the point of view of the territorially compact, nation-state model - are being applied by, or on, islands which are usually much smaller than their metropolitan counterparts. Relative small size, geographical boundedness, and the cultural specificity of the island and its people promote a distinctive identity which calls for recognition, while at the same time ensuring that the ‘experiment’ is clearly circumscribed and will not get out of hand.

Small islands suggest themselves as tabulae rasae: potential laboratories for any conceivable human project. Yet, such experimentation is a moving target. It presents an excellent opportunity to explore the tension between endogenous and exogenous pressures for political change.

Creative governance has already been expressed in recent history by states in order to exploit niches in the internationalization of trade and finance, turning inherent small size and insularity into net advantages. Island microstates, or larger states which have island components, have crafted “export processing zones” (EPZs) and “offshore finance centres” (OFCs) that have basically excised either parts of their territories from the regulatory regime that is extant in the rest of the country, or even designated their whole territory in certain instances for such purposes.

The power to tax, and tax differently, can prove critical to economic prosperity in the global era. An exceedingly low tax environment – via low corporate taxes and business rates, generous capital allowances, absence of capital gains tax, wealth tax, capital transfer tax, inheritance tax, death or estate duties, along with low personal income tax rates (15-20%) - goes a long way towards attracting both manufacturing and service industries (Baldacchino & Milne (2000: 232), to the dismay of large continental countries that complain that such strategies do not constitute ‘fair competition’. Such a clutch of fiscal powers lies largely at the basis of the success of Aruba, San Andres y Providencia, the Isle of Man (McKercher, 2000), Jersey (Le Rendu, 2004), Madeira or Labuan (Abbott, 2000); all these have done so with the backdrop backing of a much larger, reliable ‘patron’ state. Most OFCs are located on small island territories: out of 54 jurisdictions listed on a ‘low tax’ web-site, half (27) are islands or archipelagos (www.lowtax.net). Mauritius has been the largest and most successful EPZ in Africa; while Kish Island is one of three ‘industrial free trade zones’ approved by Iran’s Islamic Consultative Assembly in 1993 (Baldacchino & Milne, 2006).

“The development of offshore banking illustrates how islands ... have been transformed into spaces apparently far removed from the ‘normal’ practices associated with state sovereignty and territorial jurisdiction. ... [They also] challenge our state-centered conception of property rights and capital accumulation” (Dodds & Royle, 2003: 489; also Hudson, 1998). It is the transformation of these spaces (and the
context of dyadic negotiation in which such a transformation can take place) that is the focus of this paper. There will be a particular attempt to critique the manner in which island space challenges our understanding of ‘boundary’ and ‘identity’, themselves terms that are synonymous with islandness and fraught with difficulty and misrepresentation.

Island, Boundary, Identity

The discrete essence of islands is often deemed to be their key distinguishing feature. However, “boundedness is [often] confused with closure … a facile but unwarranted assumption” (Kirch, 1986: 2). If there truly were insular islands, then we wouldn’t even know of their existence. Barring human intent (as in the case of prison islands), very few island settlements – like Easter Island/ Rapa Nui and Greenland/ Kalaallit Nunaat - have been cut off for long stretches of time in their history; and this self-enclosure has jeopardized the very existence of such island societies (Diamond, 2005). Indeed, external ‘interventions’ are often pivotal and central to islands: whereas, on a mainland, exports, emigration, remittances, environmental or military interventions are considered ‘externalities’; things apart. It is fair to ask: are islands insular? (Gosden & Pavlides, 1994); because they are usually anything but.

Thus identifying islands as sites for ‘boundary studies’ (e.g. Pitt, 1980) can be quite problematic. All island boundaries are, by definition, permeable and are better conceived as representing interfaces with the world beyond. Thus, rather than a boundary, a better ‘trope’ to represent islandness would be a beach, that ever shifting liminality where local and global meet (e.g. Dening, 2004).

The same difficulty arises in considering island identity. The ingrained openness of small islands serves to orient their island inhabitants towards the metropole, for inspiration, vacation, shopping, education and/or employment. Their literature is dominated by the migration theme (e.g.: Markham, 1989; King & Connell, 1999). Often, emigration is the only medium which permits a viable ‘exit’ option to the pervasive and stifling totality, monopoly and intimacy of the local socio-cultural environment (Baldacchino, 1997). Small island citizens (and not just their elites) are more likely to ape, and be assimilated into, Western culture (Harrigan, 1978; Caldwell et al., 1980; Miles, 1985). They are known to have a higher propensity to migrate to developed countries (Connell & King, 1999). International migration has in fact long been recognized as heaviest from the world’s smallest territories (e.g.: Wood, 1967: 95). For various small island households, migration becomes a strategic resource, since offspring sent away can be expected to infuse remittances, in cash or in kind, to the home economy: in some instances (e.g. Jamaica, Samoa and Tonga), these are significant contributions to the gross national product (Ahlburg & Brown, 1998). At any point in time, a significant percentage of an island population may be away at its respective metropole(s) (Baldacchino, 1997: 89; Lowenthal, 1987: 41-43). All this shuttling from island to mainland, often in the context of multiple visits and trips spread out over a life-span, suggests that ‘brain rotation’ or ‘brain circulation’ are more appropriate descriptors than brain gain and brain drain (Baldacchino, 2006b). The end-result is a difficult and painful coming-to-terms with identity if this implies a steady ‘rootedness in place’. Many islanders would be “trans-nationals”,
deploying a specific pattern of de-territorialized and cross-boundary migration that challenges the concept of the temporality and spatiality of ‘homeness’ (e.g. Duval, 2004; Hatziprokopiou, 2004; Vertovec, 2001). They are at the forefront of seeking to nurture and exploit the advantages of a *glocal* citizenship (Robertson, 1995; Courchene, 1995). Just like “tidalectics”, the backward and forward movement of water, observes Barbadian poet Edward Kamau Brathwaite (1984).

If the world is dominated, as Castells (1999) puts it, by ‘the space of flows’, then islands and islanders are as much characterized by the *roots* of place as with the *routes* of mobility (Clifford, 1997; Jolly, 2001); or is it, perhaps, just a “rooted mobility” (Fog Olwig, 1993)? Appadurai (1996: Chapter 2) argues that there are various ‘scapes’, characterized by fluidity rather than fixity, that characterize the contemporary world.

I am as convinced as John Connell (1995: 276) that “[d]ichotomies are no longer useful, as the world is revealed to be far more complex, involving “movements in specific colonial, neo-colonial and post-colonial circuits, different diasporas, borderlands, exiles, detours and returns”. Ex-isles are not necessarily exiles (e.g.: Bongie, 1998: 18-24).

The rigid and idealized nation-state struggles to maintain itself in this shifting and turbulent field; it does not simply find itself fighting a rearguard action against those who would seek to turn the precepts of sovereignty on their head; it also finds itself exploring departures from the “norm” to position itself more effectively in the face of perceived threats or potential opportunities. Small islands appear easy players in this game. This is where a review of examples of the application of governance anomalies - both *by* islands and *on* islands – beyond export processing and offshore finance, become pertinent.

**Innovative Governance by Islands**

Islanders often want to have the cake and eat it too. And they can often get away with a “double standards” policy – in spite (or because?) of the global pressures for ‘a level playing field’ that seeks to eliminate preferential, bilateral deals and agreements. Islands that are sub-national units have managed to extract concessions, both *within* the jurisdiction of a sovereign state, or (in alliance with their patron state) within the ambit of a confederate super-state, like the European Union. The three key areas where such unequal arrangements have been secured to date regard: (1) citizenship rights (with associated rights of residency, property purchase and work permit); (2) indigenous self-government; and (3) paradiplomacy. All these question the strict definition of sovereignty and its imputed exclusive powers and obligations regarding: single citizenship; equal rights to all citizens; and the rights of international representation.

*a) Citizenship Status and Rights*

Many sub-national island jurisdictions exercise strict restrictions on who can work, settle or purchase property on their island – yet they forcefully lobby for and, once
secured, defend their right to maintain metropolitan passports and citizenship that allows them to access the mainland at will and without encumbrance.

The 1,800 residents of Niue enjoy dual citizenship, as an independent nation in free association with New Zealand. Tokelauans are citizens of New Zealand which gives them free right of access to that country. Under the agreement that establishes the Cook Islands as self-governing in free-association with New Zealand, the Cook Islanders are New Zealand citizens and may move to New Zealand to live and work. (In the latter two cases, Tokelauans and Cook Islanders do not have a dual citizenship.)

Strict immigration measures have been put in place in the Galapagos Islands since 1998, even though they are part of the state of Ecuador; yet, inhabitants of the Galapagos Islands are also citizens of Ecuador and enjoy all the same rights as those on the mainland. Canary Islanders have their own citizenship; yet they are also considered Spanish citizens and have the right to live, work and vote in mainland Spain. Outsiders are forbidden to own land or settle on the Andaman and Nicobar Islands without a permit. Although hundreds of illegal settlers have been residents of the islands for centuries, since the tsunami on December 26th 2004, these people, who were evacuated to mainland Port Blair for their own safety, are being refused access to their homes. In French Polynesia, every resident has double citizenship: French and French Polynesian. When Sarawak and Sabah joined the Federation of Malaysia, they negotiated arrangements that make them seem like semi-independent countries. These include the requirement of a passport to enter Sarawak or Sabah from any other part of Malaysia.

Under the Constitution of the Commonwealth of the Northern Mariana Islands, only persons of Northern Marianas descent may own land in the CNMI. Leases of up to 55 years are available. Meanwhile, United States citizenship was conferred in 1986 upon those people of the Northern Marianas that meet the necessary qualifications.

The British Overseas Territories Act (2002) has reaffirmed full British citizenship to the citizens of Britain’s remaining 15 overseas territories (of which 14 are real islands and the 15th [Gibraltar] a virtual one). (This act also grants automatic transmission of citizenship to offspring; the right of abode, including the right to live and work in the U.K. and the European Union (EU); the right not to exercise or to formally renounce British citizenship; and the right to use the fast track European Union/European Economic Area (EU/EEA) channel at the airport, free of U.K. immigration controls.) Within the U.K.’s Overseas Territories, perhaps the tightest and most one-sided arrangements for citizenship, residency and work permits are to be found in Bermuda. Property Ownership is highly restricted: expatriates may only purchase one of some 312 homes listed as available for sale to non-Bermudians; each of these has an annual rental value of US$126,000 and cost an average of US$976,000 (June 2003 figures). Moreover, the Bermuda Constitution protects Bermudians only: although human rights exist, they do not apply to non-Bermudian residents in the same ways as they do Bermudians. The employment of non-Bermudians is severely restricted and they cannot change employment without official permission and work permits that stipulate a specific employer.
The Faroese have their own separate passport because the Faroe Islands are not a member of the European Union, unlike Denmark. However, Faroese citizens are also Danish citizens. Likewise, Greenlanders have their own citizenship and passport separate from that of Denmark due to Greenland not being a member of the European Union, unlike Denmark. (Actually, in what is probably another act of innovative governance, Greenland is the only territory to have left the European Union, in 1985.)

Such rights are especially important in the face of very tight labour markets as well as potential economic crises or total environmental disasters – the volcanic eruptions on Tristan da Cunha (1971) and Montserrat (1995) required total (albeit temporary) evacuations to the United Kingdom. In the Pacific, Nauru may become the first totally failed state; and Tuvalu may be the first state to fall victim to global warming and completely disappear beneath the rising waters – for differing reasons, the citizens of both these jurisdictions may require total (and this time, probably permanent) evacuations; with interesting implications on their citizenship.

Within the European Union, both the Åland Protocol attached to the accession of Finland in 1995; and the accession document relating to Malta in 2003, provide strong safeguards and limitations – amounting, among other things, to (in Brussels speak) “permanent derogations” on the rights of settlement, which abrogate the otherwise hallowed principle of “the single market” in favour of the islanders because of the circumstances induced by very small population size (in Åland) and very small land area (in Malta). The status of Jersey, Guernsey and the Isle of Man vis-à-vis the EU is governed by Article 299 (6)(c) of the Treaty establishing the European Community and Protocol 3 of the United Kingdom’s Act of Accession to the Community in 1972. The 3 SNIJs are not members of the EU, but are part of the EU customs territory, so common customs tariffs, levies, and other agricultural import measures apply to trade between these islands and non-EU member countries. There is free movement of industrial and agricultural products between the 3 SNIJs and EU, but no free movement of services, capital, or persons. Such a customized, à la carte relationship is quite unique within the EU.

b) Sovereign Rights by Indigenous People

A second expression of governance “from below” relates to a concerted global movement for the recognition of aboriginal rights and their associated principles of self-government and self-determination within the parameters of a sovereign state.

The right ownership of land by Torres Strait Islanders according to their traditional customs was recognized in a landmark Australia High Court decision Mabo v State of Queensland in 1992. This decision recognized for the first time native title rights and interests in common law. Torres Strait Islander people now hold and deal in substantial areas of land, and usually these lands are held through some form of communal title. However, the recognition by common law of native title rights has highlighted the difficulties of these arrangements. Indigenous communities own land under customary law as self-regulating communities with distinct rights, but cannot
under current Australian statutes organize their political structures in relation to this land. There are also substantial difficulties even in identifying the "community" which might self-organize political structures in relation to land ownership.

Tribal Councils on India’s Andaman and Nicobar Islands are asserting their rightful ownership over tribal lands and preventing mainland settlers from returning to the islands post the December 2004 tsunami in an attempt to salvage their now depleted resources. The islands are also protected under the Aboriginal Tribes Regulations (1956), whereby tribal land is not allowed to be transferred by way of sale, exchange, mortgage lease or otherwise to any person other than a member of an aboriginal tribe. No person other than a member of an aboriginal tribe may acquire interest in any land situated in a reserved area or in any product of, or crop raised on, such land.

Nunavut is a huge territory (and including many islands, including Baffin, the world’s fifth largest) carved out of the Canadian North in 1999. It is Canada’s largest political unit by area and 82% of its population of some 30,000 is indigenous Inuit (Légaré, 2002).

Still in Canada, The provincial government of British Columbia and the Haida Nation have agreed to co-manage a land use planning process for Haida Gwaii / Queen Charlotte Islands. The Council of the Haida Nation was formed in 1980 with a mandate to protect and assert Aboriginal Title and the collective rights of the people. The Haida First Nation claims it is the rightful owner of the Queen Charlottes, including the resource-rich seabed surrounding the islands which contains vast reserves of untapped oil and natural gas.

In the 1997 Delgamuukw decision, the Supreme Court of Canada recognized the importance of dealing with aboriginal title, and prodded provincial governments to get on with negotiating treaties with First Nations in order to unburden the court system with legal proceedings on the matter.

The Akaka Bill, tabled to the US Senate in 2005, is designed to "... provide a process for the recognition by the USA of the native Hawaiian governing entity" (Borreca, 2005). The intent in drafting this bill is to provide Native Hawaiians with the opportunity to reorganize their governing entity for the purposes of a federally recognized ‘government-to-government’ relationship with the United States. This is important because it provides parity in the way the federal government deals with the indigenous peoples who inhabited the lands which have become the United States.

Not every such initiative has been successful. However, the claim that islands are: “... too small, too weak, too defenceless to manage in the modern world” (Royle, 2001: 158) and merely “places without power” (ibid.: 57) is an incorrect and sweeping assertion. The evidence is mixed, power is not unilateral, and a case can certainly be made for the creative solutions to difficult economic challenges that some (and not necessarily all, as shall be discussed below) non-sovereign island juridcistions have
developed, often as a direct outcome of utilizing the resourcefulness that their jurisdictional status and capacities permit.

c) Paradiplomacy

The affirmation of sub-national territorial identity and jurisdictional competence can only induce the elaboration of paradiplomatic relationships and thus reinforce the blurring of distinctions of status and privilege that were once at the core of international diplomatic practice. Paradiplomacy is the outreach of non-sovereign jurisdictions to actors beyond their own borders (Bartmann, 2006).

Aruba, the Netherlands Antilles, the British Virgin Islands, Tokelau, Cayman Islands and Macao are sub-national associate members in UNESCO (Corbin, 2001: 143). Yet, the Cook Islands and Niue enjoy full membership in UNESCO, raising intriguing questions concerning their international status.

Taiwan is at once a normal state, a government-in-exile and a de facto state engaging in both official and internationally recognized channels of diplomacy in some cases and in paradiplomatic exchange in others. 27 countries in the world recognize Taiwan (as the Republic of China) and allow it to have an Embassy, (along with Panama, which maintains a Taiwan Consulate-General). 15 countries have a resident diplomatic embassy in Taiwan. For 66 other countries, however, relations are of a purely paradiplomatic nature and may very well operate as de facto embassies. (Indeed, the most common nomenclature for the Taiwan office in their country is: Taipei Economic and Cultural Office.) For 57 of these 66 countries, there are paradiplomatic resident missions in Taipei. Taiwan’s major activity in an international organisation is its membership in the World Trade Organization where it maintains a regular permanent mission, under the title of: The Special Customs Territories of Taiwan, Penghu, Kinmen and Matsu.

The Turkish Republic of Northern Cyprus, recognized as a sovereign state only by Turkey, maintains offices of the representative of Turkish Cypriot Community in London, Brussels, Washington DC and the United Nations; as well as a Trade and Tourism Office of the Turkish Cypriot Community in Baku, Islamabad and Abu Dhabi. In Geneva, the mission exists physically and functionally as part of Turkey’s permanent mission.

The Faroe Islands currently maintain 3 representative offices: London and Brussels with diplomatic status and Copenhagen without diplomatic status. The offices in London and Brussels “… are located within the Danish embassies and the Faroese diplomats are formally accredited to the respective host nations as Danish diplomats working with Faroese affairs” (Isfeld, 2006). Moreover, with the coming into effect of new legislation in July 2005, the Faroese government can - on its own - enter into negotiations and conclude treaties with other states and international organizations without previous consent from Denmark regarding all areas that are under the Faroese authorities … (ibid.).
Greenland representatives have a similar power to negotiate directly on issues within the purview of the Home Rule Government (Motzfeldt, 1997: 193-94). Greenland maintains Representative Offices in Copenhagen and Brussels, the latter a direct monitoring base of EU developments that could directly affect the island.

In the Caribbean, CARICOM, the Caribbean Community, has 15 member states, including the very small island of Montserrat. While Anguilla, Montserrat and the British Virgin Islands – all SNIJs - are among the 9 members of the Organization of Eastern Caribbean States. Moreover, the OECS has its own diplomatic missions in Ottawa and Brussels, while CARICOM maintains a permanent observer mission to the UN in New York: especially useful channels of international outreach for their non-sovereign members. There are 14 consulates resident in Hamilton, Bermuda.

In the Pacific, the Pacific Islands Forum represents the Heads of Government of all its 16 members. The Cook Islands and Niue, both states in free association with New Zealand, are full members. Moreover, the Cook Islands has established separate diplomatic relations with over 20 states at Embassy or High Commission level; and no less than 23 states maintain full diplomatic relations with the Cook Islands at the Embassy or High Commission level. As far as current ‘state normalcy’ goes, only UN membership remains absent for the Cook Islands.

Of course, one ultimate objective of paradiplomacy may be outright independence. This is currently an option ‘of the last resort’ in the context of ‘up-side down decolonization’, where the metropolitan powers which still maintain associated territories that are anachronistic remnants of colonialism – the USA, New Zealand, Netherlands, UK, France, Denmark – are often keen to grant independence, while the small island units are disinterested in such prospects which would mean cutting off the umbilical cord (and its citizenship, travel, security, tourism access and other beneficial implications) which have served them very well to date (McElroy & Mahoney, 2000). Thus Bermuda established an Independence Commission to explore prospects in 2005. Other than East Timor (2002), no other small island state has sought independence since Brunei in 1984. (The Marshall Islands, Palau and Federated States of Micronesia actually got their independence in the 1990s - but as part of an arrangement that ‘subcontracts’ their international relations to the USA in a Compact of Free Association. Is this a modern version of suzerainty, and another innovative governance practices to ponder over?)

**Innovative Governance on Islands**

While islanders may be flexing their muscles and taking on themselves characteristics that would have been deemed exclusive to sovereign states until recently, some mainland jurisdictions have had their own pet island projects.

Betermier (2004: 64) has suggested that metropolitan powers pro-actively “choose to retain” territories in line with strategic self-interest and military expediency. The situation is made easier when these metropolitan powers deal with islands as *tabulae rasaee* and do not, in particular, have to contend with civilian residents and civil law obligations. A measure which improves the ability to use an island for military
purposes is either to completely depopulate it and/or else to engineer its exclusive habitation by military personnel. There are thus islands in the world today which are populated but by “non-residents” who operate under military discipline.

a) The Ilios

Britain summarily deported the entire Ilois population of the Chagos Archipelago in the British Indian Ocean Territory and then leased the islands to the USA, which in turn built an ultra-sophisticated military base at Diego Garcia: a situation unchanged in spite of a decision by a London high court (Harwood, 2002; Pilger, 2004; Winchester, 2004).

b) Okinawa

Japan maintains its only large and contentious US military bases on the outlying, densely populated SNII of Okinawa. The rape of an Okinawan schoolgirl by three US servicemen in 1995 caused a massive outcry: tens of thousands of Okinawans turned out to demonstrate against the American military presence on their island. That demonstration, combined with the determination of Okinawa’s governor to see all American bases closed by 2015, may have suggested that the US bases on Okinawa faced overwhelming local opposition. However, after 10-year-long negotiations, the bases remain, but are the subject of a re-siting agreement agreed in 2005 (Kakazu, 2000; Buckley, 2005).

c) Guantánamo Bay, Cuba

The USA meets another strategic purpose in the questionable practice of detaining suspected terrorists in ‘legal limbo’ on its island base at Guantánamo Bay in Cuba (Supreme Court of the United States, 2004). The US Supreme Court on June 29, 2006 has repudiated the Bush administration’s plan to put Guantánamo detainees on trial before military commissions, ruling broadly that the commissions were unauthorized by federal statute and violated international law (Greenhouse, 2006).

d) Ascension Island

Private ownership of land has not been permitted on Ascension Island, a UK Overseas Territory; all residents are housed in employers’ quarters. Ascension has been operated like a classic company town throughout its economic history. Because of this, Ascension Island has never had a permanently settled population; labour on the island has been subject to short term contracts. This trend is expected to change over time, however, as some devolution processes continue. The UK government has asserted that no inhabitant of Ascension Island has a "right to abode": this is a point now in dispute by Council members, long time employees, and their family members, as noted in the local newspaper "The Islander". With the 2003 Wideawake Agreement between the UK and the USA, Wideawake Airfield on Ascension Island will be opened to civilian charter traffic. Previously, only military traffic has been permitted.
e) Excised offshore places, ‘non-Australia’

Strategic interests go beyond military concerns and can spill over into broader security issues. In its own proactive manner, Australia made history in declaring parts of its territories and territorial waters to be “non-Australia” for specific purposes. Following the MV Tampa incident of late August 2001, the Australian Legislature passed the Migration (Excision from Migration Zone) Act 2001 to amend the Migration Act in order to limit the country’s obligations with respect to migrants. It does so by excluding portions of its sovereign territory for the purposes of claiming asylum. It designates Christmas Island, Ashmore Reef, Cartier Islands, the Cocos (Keeling) Islands, and Australian sea and resources installations as “excised offshore place[s]” deemed outside the country’s “migration zone.” Under the law, persons who enter these offshore places are defined as “offshore entry persons” and are unable to make visa applications, including requests for asylum, unless the minister exercises discretion on their behalf (Connell, 2006: 55).

Contested Spaces

Finally, since power is inherently contestable, we should not be surprised to find that there is a fair number of cases where ‘mainland’ and ‘island’ interests are pitted in a dynamic clash to sway a SNIJ in a specific direction, either with a view to exploit “offshoreness” and introducing asymmetrical powers with specific ends, as amply described above; or else with a plan to remove these asymmetries in order to regularize or neutralize the position of a SNIJ within a broader constitutional frame.

There are various indigenous island groups that are pressing for international recognition and for rights of self-determination. The Raizal, native islanders of San Andres y Providencia, are considered Colombian citizens; however, they have been calling for self-determination in response to allegedly discriminatory government policies which have marginalized their community both socially and economically, displaced them from their lands and overpopulated the islands with mainland immigrants. The people of Banaba (Ocean Island), within Kiribati, seek recognition as a nation: just over 200 still live on an island that has been ravaged by excessive phosphate mining; while others have been relocated to live on Rabi Island, in the Fiji archipelago. The Tamil Tigers on Sri Lanka have been involved in a bloody civil war in pursuit of their claim for the independent jurisdiction of Tamil Eilam.

A couple of more detailed case illustrations below highlight the specifics of such ‘mainland-island’ power games:

a) Norfolk Island vs Australia

A case in point is Norfolk Island, a SNIJ of Australia, which became the first Pacific Island offshore business centre in 1966. By 1975, thousands of companies had registered on the island and thus avoided the high taxation rates of the Australian mainland. This concerned the federal government, and in 1976 the High Court of Australia unanimously ruled that the federal government had full sovereign powers
over Norfolk Island, including areas of taxation. This effectively killed company registration on the island.

Moreover, in 1990-1991, there was a renewed effort by a group of federal politicians to bring Norfolk Island into the Australian federal system. This sparked a referendum on the island, held in December 1991, in which 81% of voters (801 of 986 ballots cast) opposed being integrated into the Canberra federal system. The Australian government proposed that only Norfolk Islanders with Australian citizenship should be allowed to run for, or vote for, the Norfolk Island Legislative Assembly. This was foiled, and the lone concession was that Australian citizens who wished to vote in federal elections were granted the right to do so. The residents’ opposition to joining the federal electoral system is that they viewed it as a pretext to the imposition of federal income tax. In 1998-1999, the Australian government once again created legislation to restrict on-island voting to Australian citizens. The bill was defeated in March 2000 in the Australian Senate. On 26 August 1998 another referendum was held, with 78% of voters opposed to Australia making any changes to the Norfolk Island electoral process. A revamped proposal was defeated by 72% of voters in another referendum held in May 1999. Under the auspices of the Joint Standing Committee on the National Capital and External Territories, in 2002 the issue of restricting voting in Norfolk Island elections and referendums to Australian citizens was once again raised. The Commonwealth Minister publicly announced that the federal government would follow this recommendation and introduce amendments to the *Norfolk Island Act 1979* in order to bring the island’s electoral policy in line with Australia’s. The Norfolk Island government’s view remains that, if any changes are made to its governance, such change should be implemented by the Norfolk Island legislation.

As if these controversies were not enough, in 1999, the Australian Human Rights and Equal Opportunity Commission found that Norfolk Island’s immigration legislation violates Australia’s protection of liberty of movement and freedom of choice of residence. It stated that Norfolk Island’s immigration laws must be replaced by Australia’s *Migration Act 1958* and that the island government’s power to pass legislation on immigration be revoked; furthermore, it was stated that Norfolk was not justified in establishing its own immigration legislation because it was not necessary to protect the island’s environment or Pitcairn heritage.

*b) Vieques, Puerto Rico vs the USA*

In the Caribbean, the US military purchased 60% of the land area of Vieques, an island off eastern Puerto Rico (a SNIJ), in the 1940s. The US military used Vieques as testing grounds for bombs, missiles, and other weapons. Claims have linked Vieques’ relatively high cancer rate to these tests; especially after the US Navy admitted to use of depleted uranium at least on one occasion in 1999. In March 1999, a Vieques native was killed by a bomb dropped by a military jet during bombing exercises. Native Viequense – which now number around 9,000 - and non-native pacifists seized upon this event as the flashpoint for ending military exercises there. Many travelled to Vieques to protest the bombings and testings, by illegally introducing themselves and camping on the bombing grounds. The Puerto Rico Legislature amended
environmental legislation in 2001 so that US Navy gunnery practice would not be permissible under new noise levels (Becker, 2001). The Puerto Rico Governor began talks with the U.S. government seeking a solution to the problem, and in 2001, an agreement guaranteed the military’s vacating of the island in May 2003. Facilities and equipment were then turned over to the island’s government by the US Navy.

**Theoretical Discussion**

The jurisdictional powers that island ‘federacies’ enjoy are principally a result of bilateral negotiations between island political elites and a (usually benign) metropole. This bargain is struck against the backdrop of a particular colonial inheritance, a local ‘sub-nationalist’ culture, and of the varying ambitions of local elites to win jurisdictional powers to advance ‘sub-national’ territorial interests. At other times, however, island autonomies arise as crafted, deliberate devolutions of central governments eager to exploit islands as distinctly (and preferably discreetly) ‘managed’ zones for economic, military or security-related activities in a globalized economy.

It may appear that ‘island studies’ hold the answer to the burning question posed by Lloyd (2004: 2): “What is a border when it is not a point of contact between nations?” Contrary to much conventional wisdom, islands come with porous, permeable borders: they are liminal spaces with osmotic properties, important tools in a contemporary game of economic prosperity, military strategy or national security. Sub-national jurisdictional status can provide a space within what might appear to be a de jure, unified and indivisible sovereign unit.

It is fractal geometry that reminds us that there is no such thing as an edge. Mandelbrot (1983: 1) urges us to consider how the reality of matter is one of irregular continua, of anything but perfect figures… and (we can add), perfect borders:

“Clouds are not spheres, mountains are not cones, coastlines are not circles and bark is not smooth.”

This is clearly one of the many paradoxes and contradictions of globalization: on one hand, rampant economic liberalization with its space (and time) compression (after Harvey, 1990) that erodes trans-national borders; yet, concurrently, the utilization of jurisdiction as a resource to engineer an inner space. This can accommodate people that are recognized as nations operating under some arrangement for self-determination and yet within the confines of another territorial entity. Moreover, jurisdiction can also be deployed (usually with the blessing of the law) with a view to develop a ‘non-space’, and therefore holding ‘non-citizens’, subject to ‘non-rights’ – such as non-resident employees, prisoners, illegal migrants or military personnel.

There are various other examples of ‘ambiguous zones’, including airport terminals: Frankfurt-Main, Germany’s main international airport, has been a legally declared detention and ‘extra-territorial zone’ since 1993 (Zimmermann, 2000); and an Iranian man who lost his papers while in transit lived in Terminal One of Charles De Gaulle International Airport for 11 years (Moseley, 1999).
Conclusion

If the predicament of offshore finance centres, easily the pioneers of this offshoring game, can provide useful insights, then we have to take note that much international pressure has been brought to bear on these “tax havens” and their “unfair competitive practices” by the G7’s Financial Action Task Force (G7, 2000). The Isle of Man and the other United Kingdom Overseas Territories have had to alter their fiscal policies under pressure from the European Union, in order to conform to the latter’s code of conduct on business taxation (Bell, 2002). The international community can develop concerted action – coercive or moral - when departures from acceptable norms of governance, civil and economic practice start to bite significantly. The US Government has had mounting international pressure over the operation of Guantánamo; the Australian Government is under different pressure over its territorial ‘excision’ by Human Rights activists.

Yet, with their disposition towards administrative independence, and with their proneness towards unique recognition through the geographical coupling of location and small relative size, islands predominate as ‘autonomies’ within bilateral, ‘small unit – large unit’ relationships. In spite of all the forces that have been brought to bear upon it, ‘offshoring’ remains very much alive. The opportunities that it provides, to both mainlands and islands, have not been lost. In a world of multi-level governance, islands continue to serve as epitomes of offshoring; as platforms for innovation in realpolitik.

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In or Out? Sub-National Island Jurisdictions and the Antechamber of Paradiplomacy

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Abstract: - Long standing distinctions, both legal and diplomatic, between established sovereign states and other international actors, seem to be increasingly blurred by changing practices in international relations. Sub-national island jurisdictions (SNIJs) are among the less recognised players in conventional international relations; but many of them are now particularly active in external representation, engaging in unexpected external relations, and acquiring means to enhance their regional and even global presence. This paper reviews the nature, emergence, purpose and activity of contemporary paradiplomacy, as it is played out by small, often island, jurisdictions, and invites an appreciation of the continued currency of sovereignty.

The Setting
When East Timor achieved sovereignty on May 20, 2002, it was a ceremony that marked not only the end of an agonizing process of self-determination for the islanders of this small territory. In representing the full history of Europe’s colonial reach overseas, it may also be seen as the final act of European decolonisation itself. Yet, was East Timor truly the last scraping of the bottom of the colonial barrel? There are various types of dependencies scattered across the oceans of the world, many of them islands, many still subject to European metropoles. The quest for sovereignty, as the only acceptable path to self-determination, does not seem to be the burning issue in these few remaining territories. Many are content to maintain the security of metropolitan relationships into the distant future. Some, like Aruba, have actually considered and then rejected sovereignty as an appropriate future for the island. Most recently in Tokelau, with a population of 1500, a referendum on independence failed to win the two thirds majority required as the islanders elected to retain the continued financial security of their relationship with New Zealand (Chapman, 2006). In some cases, as in Mayotte, a relationship with a distant metropole is seen as a safer and more secure association than the possible alternative of dependence on a larger central government nearby. The recent efforts of Nevis to secede from neighbouring St. Kitts are a dramatic example of such
centrifugal forces at play in archipelago states (Premdas, 1998, Chapter 2; Dee, 2001, Chapter 5). Similarly, the very small federation of the Comoros has been plagued by secessionist movements from the time of its independence, first with Mayotte, still in the colonial womb, and more recently with both Moheli and Anjouan (Rushby, 2001).

The issue of sovereignty, then, is not entirely off the table, even in those small sub-national island jurisdictions where domestic debate seems to be preoccupied with other issues. It retains a powerful appeal for many Nevisians, it is a pressing ambition for many Kanaks of New Caledonia, and commands persistent minority support in other French territories such as Guadeloupe or French Polynesia. It is the basis of a Government commissioned report in Bermuda. It continues to shape the constitutional debate in the Faroe Islands and it remains a long term vision or contingency plan in other small island jurisdictions such as Greenland or the Isle of Man. In the Åland Islands, there has been a dramatic growth in recent years of a pro-independence movement in public opinion at large and in two political parties unequivocally supporting sovereignty. (Anckar, 2002, pp. 221-224) It is a nostalgic fantasy for many Newfoundlander as an expression of their frustration and discontent in the Canadian federation. Even in tiny Tokelau, 60% of the islanders voted in favour of independence in spite of the economic risks (Chapman, 2006).

For the most part, however, the remaining small island sub-national jurisdictions live contentedly in legally dependent relationships which typically allow considerable autonomy and latitude, even in relations with the outside world beyond their metropolitan centre. Indeed, the capacity to engage the outside world through varying patterns of communication and representation, a phenomenon now widely termed paradiplomacy, is one of the developments inviting a reassessment of these small islands’ constitutional future, beyond the once conventional assumptions of self-determination: the inevitable final act of sovereignty. The circumstances of these small island territories and the options open to them are themselves striking evidence of a rapidly changing international system.

Long standing distinctions, both legal and diplomatic, between established sovereign states and other international actors, seem to be increasingly blurred by changing practices in international relations and particularly by the activity of non-sovereign and unrecognized jurisdictions in external representation. These alternative practices of international relations may be seen metaphorically as an antechamber to the formal, legal and recognized diplomacy of the grand hall itself. Some entities may be able to leave the antechamber for the great hall for specific purposes (such as membership
in inter-governmental organizations), but not for others (such as the accreditation of legations). Others, indeed most others, are confined to the antechamber. Sub-national island jurisdictions are among the less recognised players in conventional international relations texts; but many of them are now engaged in unexpected external relations, acquiring means to enhance their regional and even global presence. To be sure, the increasingly assertive external engagement of sub-national jurisdictions is also evident among other international players: de facto states, often “nations in waiting,” (Bahcheli et al., 2004), regional organisations edging towards approximations of confederacy, even cities and metropolitan areas seeking to create transnational regions of economic activity with some measure of jurisdictional or institutional identity transcending the state borders which divide them. In short, the remaining “remnants of empire” as well as small jurisdictions linked with a non-colonial metropolitan centre, are participating in a rapidly changing global milieu characterised by multiple levels of legal, political and diplomatic status and capacity. As conventional distinctions of status and prerogatives seem to be blurred, particularly between internationally active dependent territories and sovereign states, the phenomenon of paradiplomacy appears as both an agent and a consequence of that change. It is not surprising, then, that most of the current discussion in the literature is focused on jurisdictions below the sovereign state.

Michael Keating sees the emergence of paradiplomacy as an understandable response to powerful currents of change within the international system: globalisation and the rise of transnational regimes. Both “have eroded the distinction between domestic and foreign affairs and by the same token have transformed the division of responsibilities between state and subnational governments” (Keating, 1999, p. 1). Globalization has expanded economic space beyond the reach of national governments, thus pulling subnational jurisdictions on to the larger stage of economic interaction. Both cultural and political consequences follow as states find it ever more difficult to exploit their traditional role as guardians of national identity with the economic space around them drifting in every direction and new currents of activity, linking both local and global players. Similarly, in such a setting, transnational regimes have emerged to meet the challenges of flux in all directions with many such regimes speaking directly to the core interests and central issues of sub-national jurisdictions.

Keating reminds us, however, that the consequences of these changing dynamics within the international system do not necessarily fatally erode the importance of territorial competence and particularly of territorial identity. Indeed, Keating speaks of “the reinvention of territory” as a
distinguishing feature of the contemporary international system (Keating, 1996, pp. 47-48; Bartmann, 1998, pp. 239-50). Moreover, territorial fault lines within states, particularly multinational states, may be accentuated and, if anything, a resurgent localism appears to be an unexpected response to globalisation (Bartmann, 2000). This may be particularly true in small island jurisdictions where territorial identity is both inescapable and ever intrusive and where “the geographies of the mind” (Knight, 1982, p. 517) are so pronounced. The affirmation of subnational territorial identity and jurisdictional competence can only induce the elaboration of paradiplomatic relationships and thus reinforce the blurring of distinctions of status and privilege that were once at the core of international diplomatic practice.

Paradiplomacy can be best understood as a field of international interaction apart from the conventional channels of international diplomacy. Within this field are many players with different objectives and, most important, different levels of sanction. They include sub-national jurisdictions which may pursue agendas that are broadly functional or highly political, that is, identity-reinforcing and even state-building in their objectives. Some, following the work of Ivo Duchacek (1986) have narrowly defined paradiplomacy as essentially “political-functional contacts with foreign countries …which are (yet) bound to have some political dimension (Lubin, 2003/04, 22). In contrast from this perspective, protodiplomacy “describes those international outreach activities of a non-central government like … Québec that tries to graft some sort of a strong autonomist or even sovereigntist message onto its economic, social and cultural links with foreign countries (ibid.) These distinctions are typically very difficult to dissect. Yet, identity affirmation may not be a stepping-stone to secession and the commitment to the latter can be muddied depending on the party in power or more typically the vicissitudes of the governing coalition at the time. For our purposes in this article, the term paradiplomacy refers to all those external activities by non-sovereign jurisdictions that simulate and approximate the formal, legal and recognized diplomatic practices of sovereign states. Whatever the differences of purpose, all these sub-national players enjoy a latitude of international participation that was once far beyond their status, but which is now part of an expanding international network. But it is a network sanctioned by their metropolitan centres and consequently by the international system, itself still a system based on sovereign states.

It is a field which also includes a wide range of players without sanction, apart from a few patron states. These entities still attempt to participate in the same field as those which enjoy a recognized measure of legitimacy. For these territories, however, de facto states as opposed to sub-
national jurisdictions, Northern Cyprus in contrast to the Faroe Islands, the actual exercise of paradiplomacy is hugely different though the cosmetics are similar. Engagement with sanction, however limited, will in the end determine the actual substantive relations of players in the field.

Paradiplomacy, then, is a field of international activity which simulates or approximates official and conventional international relations. All the cases discussed in this paper are within this ‘antechamber’. But some can simulate the conventions of official diplomacy more effectively than others and typically do so with the acquiescence of their metropolitan centres and therefore of international society as a whole. In these cases, long-standing conventions of international diplomacy are indeed stretched to accommodate entities that are not sovereign states, though the decision to make such accommodations is still vested in those sovereign states. Others also seek to simulate established conventions of diplomacy; but their presence in the antechamber has much less resonance for they can call upon no sanction, save that of a possible patron state or a handful of support among the ranks of the sovereign membership of international society. The fact that they are allowed to set up shop at all in accepting capitals is, of course, an acknowledgement of their presence; but, typically, this is countered by strict protocols of neglect and non-engagement.

For those jurisdictions without such sanction, there are still opportunities to participate in this antechamber, but the qualitative substance of that participation is very different: they remain quarantined in spite of their frantic activity. They are pariahs, near pariahs or simply ignored in even those basic channels of acknowledgement readily granted to sanctioned sub-national participants in the antechamber.

Paradiplomacy is the outreach of non-sovereign jurisdictions to actors beyond their own borders and the frontiers of their metropolitan relationships or claimant states. It may involve direct contact with sovereign states with which the metropolitan centre already enjoys diplomatic relations. It may include formal channels with other sub-national jurisdictions participating in areas of functional cooperation, perceived mutual economic advantage and cultural exchange. It may include associate membership or even full membership in inter-governmental organisations, particularly at the regional level (Corbin, 2001, pp. 136-159). Paradiplomatic missions may be simple and understated, a government mission of non-diplomatic status with an *ad hoc* and general
mandate of representation and information gathering. It may be an office to promote tourism or trade initiatives. Similarly, non-sovereign jurisdictions may be the recipients of such paradiplomatic missions and even consular offices. Paradiplomatic missions may even stretch the cosmetic features of the mission to simulate full diplomatic status, even though the actual accreditation falls well short of legal recognition, typical of the activity which Martin Lubin terms protodiplomacy.

Because most sub-national paradiplomatic missions are in functional areas of representation, they are frequently viewed as benign by the metropolitan centre. Nonetheless, benign or not, they do allow a non-sovereign jurisdiction to reach out beyond and around the metropolitan centre to engage in independent exchanges with the outside world. This can be particularly valuable if the sub-national jurisdiction can participate in intergovernmental organizations with its own delegation and under its own auspices and thus with direct access to sovereign governments around the world. Quebec has long aspired to a separate delegation at UNESCO and recently the newly elected Canadian prime minister, Stephen Harper, indicated that his Conservative government is ready to concede this issue (Séguin, 2006, A5). UNESCO and other specialized agencies allow for associate membership which grants participation in the agencies’ deliberations but without a vote. If this is the formula adopted for Quebec, then the province will join Aruba, the Netherlands Antilles, the British Virgin Islands, Tokelau, Cayman Islands and Macao as sub-national associate members in UNESCO (Corbin, 2001, p. 143). Yet, the Cook Islands and Niue enjoy full membership in UNESCO, raising intriguing questions concerning their international status.

The legal rights of sovereign states have long been prized by entities seeking international recognition. It is one reason why so many advocates of national self-determination in the period of post-war decolonization could settle for nothing less than sovereignty as the full and final culmination of the self-determination process. Sovereignty provided a once dependent territory with a “green card” to engage the international system fully and with legal equality on its own terms. It would be folly to underestimate the huge symbolic appeal of separate international legal personality for many dependent territories, however rational and persuasive the functional arguments for alternative forms of constitutional status might be. In no situation is the right to full international legal personality more cherished or coveted than in de facto states where actual independence on the
ground has meant little in their efforts to win international acceptance. The 30-year quarantine of the Turkish Republic of Northern Cyprus would argue powerfully for the substantive capacities of recognized international legal personality (Bartmann, 1999, pp. 260-286). In the case of the TRNC, as in other unrecognized states, governments do engage in a necessarily low level of paradiplomacy; but this is still not sufficient to circumvent the punitive realities of their own pariah status.

**Ambiguities of Status: the British Dominions and the European Micro-states**

If we consider the historical development of the 20th century state system, the apparent ambiguities of status and privilege concerning international representation are not unique to contemporary developments. With the establishment of the League of Nations in 1919, a shift to an inclusive and egalitarian ethos in international relations was clear and with it the problems of status and rights attending issues of membership. The international legal status of some founding members of the League was not unlike that of many of today’s small island sub-national jurisdictions. League membership was seen to be an acknowledgement of international legal personality, “fledgling” though it might be (Granatstein and Hillmer, 1991, p. 74), given the emphasis placed on the capacity of member states to fulfil their obligations under the Covenant, particularly Article 16 with its expectations of collective responsibility.

The historic narrative in this context is one of ambiguity and mixed signals. While accepting India, still a British colony, or Britain’s Dominions, as members of the League, the Admissions Committee refused the application of Liechtenstein, a long-standing European principality whose sovereignty and statehood the Committee acknowledged and whose application was enthusiastically sponsored by Switzerland (Gunter, 1974, pp. 496-501). Liechtenstein’s rejection reflected assumptions about the nature of sovereignty and the attributes of statehood that were conventional at the time: in 1919, Liechtenstein initiated agreements with Switzerland which included Switzerland’s representation of Liechtenstein’s interests abroad when called upon to so act by the Government in Vaduz. Most of these agreements did not take effect until after Liechtenstein’s application had been rejected (Raton, 1970, pp.76-77). Nevertheless, the Committee reasoned that because Liechtenstein had “. . . chosen to depute to others some of the attributes of its sovereignty … we are of the opinion that the Principality of Liechtenstein could not discharge all the international obligations which would be imposed on it by the Covenant” (League of Nations, 1920, p. 667). Yet other members, notably self-governing Dominions and colonies, did not possess the
“attributes of sovereignty’ which Liechtenstein was alleged to have “surrendered.” As Michael Gunter concluded: “the real reason for the rejection of Liechtenstein was her smallness, not her deputation of some sovereign attributes” (Gunter, 1974, p. 499). Moreover, as he further noted, Liechtenstein’s rejection was “by inference” a rejection of “other ministates which might apply in the future” (ibid.). Indeed, Luxembourg proved to be the single, notable exception (Hudson, 1935).

Iceland’s constitutional status in the Danish Realm was not unlike that of the Dominions in the British Empire. Iceland did approach the League in 1918 through the French Foreign Ministry and again in 1930, the 1000th anniversary of the Althing; but Icelanders showed little enthusiasm for League membership because, as Jónas Jónsson, Minister of Justice at the time, put it, “… of smallness, poverty and a kind of shyness” (Gröndal, 1974, p. 25). Iceland’s representations and interests in the world continued to be conducted by the Danes, though Iceland maintained an embassy in Copenhagen and posted Icelandic trade attachés to some embassies and consulates. With Germany’s invasion and occupation of Denmark in 1940, Iceland established missions of its own in Washington, London and Moscow (ibid.). With independence in 1944, Iceland developed a full diplomatic service. For the other European micro-states, their international relations were confined to the margins of international diplomatic practice during this long interregnum. While they were sovereign states and ceremonially treated as such, in substance their external relations were paradiplomatic in nature and highly qualified; much the same as the external relations of non-sovereign jurisdictions today.

Paradiplomacy as a State-building Instrument for De Facto States.

The end of the decolonization process then may be symbolically recognised in the final transfer of sovereignty to East Timor. But it was also marked by the international admission of “leftovers” of the Westphalian system where events finally caught up with their long neglect. After St. Kitts and Nevis, São Tomé and Principé, and the Seychelles, what residual arguments could be mounted against Liechtenstein, the most industrialized country per capita in the world, or San Marino, the oldest continuing sovereign state in Europe? In short, the eventual course of self-determination, weakened whatever inhibitions constrained these states and the residual resistance within the international system itself, thus emboldening them to leave the antechamber and
gatecrash the grand hall.

These ‘state-building’ functions of paradiplomacy are still powerful motives for some non-sovereign jurisdictions and players beyond the pale of normal international relations. For unrecognized, _de facto_ states, the search for legal recognition and the formal acknowledgement of their legal existence as self-governing nations, are the core issues of their agenda. The Turkish Republic of Northern Cyprus is recognised by Turkey, of course, but it is a pariah state everywhere else, even in Europe, where its territory lies within the European Union. The Cyprus issue is truly a bizarre combination of fiction and pretension. The territory of the TRNC is legally part of the space of the European Union but subject to an EU blockade. The TRNC is even shunned officially in the Islamic world where there are prominent non-official constituencies of co-religionists and even muted empathy in official corridors. The TRNC has established, in addition to its embassy and consulates in Turkey, a network of representatives or missions in key capitals, but the nomenclature remains as ambiguous as the status of its personnel. Even in this understated presentation, these missions remain off the radar screen of official exchange.

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**TABLE I: PARADIPLOMATIC MISSIONS OF THE TURKISH REPUBLIC OF NORTHERN CYPRUS**

The Turkish Republic of Northern Cyprus, Representatives Offices:

[www.trncgov.com/representativesoffices.htm](http://www.trncgov.com/representativesoffices.htm)

- London: Office of the Representative of the Turkish Cypriot Community
- Baku: Trade and Tourism Office of the Turkish Cypriot Community
- Brussels: Office of the Representative of the Turkish Cypriot Community
- Washington: Office of the Representative of the Turkish Cypriot Community
- New York: Office of the Representative of the Turkish Cypriot Community, UN Plaza
- Islamabad: Trade and Tourism Office of the Turkish Cypriot Community
- Abu Dhabi: Trade and Tourism Office of the Turkish Cypriot Community
- Geneva: Office of the Representative of the Turkish Cypriot Community, Permanent Mission of Turkey

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In the TRNC case, host countries insist these missions be registered as The Office of the
Representative of the Turkish Cypriot Community and, of course, their personnel cannot claim diplomatic visas, an issue which presents recurring problems for the officers at these stations. For the missions in the Islamic capitals, the rules of the European blockade are not in effect and consequently these missions are designated with a more official status as Trade and Tourism offices. But, in Geneva, the mission exists physically and functionally as part of Turkey’s permanent mission.

**The Anomaly of Taiwan**

There are certain entities which seek similar acknowledgement as the *de facto* states discussed above. These are governments-in-exile whose territory lies beyond their reach and, indeed, whose separation from that territory may span many generations as their lonely diplomats seek to keep the flicker of their national candle alive in distant capitals. At one time, when international divisions were more profound, these governments were common, particularly for the German occupied territories during World War II. In the post-war years, Western powers allowed the Baltic states of Estonia, Latvia and Lithuania to maintain their legations and did not recognize their legal incorporation into the Soviet Union, even as they acknowledged that these three republics were functioning as units subject to Soviet and law and practice. In the contemporary international system, the Chinese occupation of Tibet since 1949 continues to provoke anti-Chinese and pro-Tibetan demonstrations and activities around the world.

Yet, as difficult as the question of Tibet is for China, Taiwan is the most pressing issue. The Republic of China on Taiwan may be superficially regarded as a government-in-exile. The Taipei government continues to maintain, after nearly 60 years, that they are the legitimate government of the whole of China. Of course, the island government maintains authority only over Taiwan itself and a handful of offshore islands. Still, 27 countries in the world recognize Taiwan (as the Republic of China) and allow it to have an Embassy, (along with Panama, which maintains a Taiwan Consulate-General). Fifteen countries (Belize, Burkina Faso, Chad, Costa Rica, El Salvador, The Gambia, Honduras, Malawi, Marshall Islands, Nicaragua, Palau, Panama, Paraguay, Sao Tome and Principe, Solomon Islands) have a resident diplomatic embassy in Taiwan. For 66 other countries, however, many with extensive and hugely important economic links to Taiwan, relations are of a purely paradiplomatic nature and - given China’s own preoccupation on this issue - with a highly sensitive nomenclature to describe ‘non–official’ missions, though they may very well operate as *de*
facto embassies. (Indeed, the most common nomenclature for the Taiwan office in their country is: Taipei Economic and Cultural Office.) For 57 of these countries, there are paradiplomatic resident missions in Taipei, with such names as the Argentina Trade and Cultural Office, the Malaysia Friendship and Trading Centre, and American Institute in Taiwan. Similar cosmetic fudging has allowed for some Taiwanese participation in international bodies such as the Olympics and for direct personal representations between Taiwanese government leaders and their counterparts in other states. In short, Taiwan is at once a normal state, a government-in-exile and a de facto state engaging in both official and internationally recognized channels of diplomacy in some cases and in cloaked paradiplomatic exchange in others. Taiwan is an international anomaly both in and out of the antechamber (See: www.mofa.gov.tw).

What is perhaps most striking here is that Taiwan, a major regional economic and military power, and one of the most stable democracies in Asia, is still very dependent on paradiplomacy in the antechamber of international relations. The official and recognized delegations which Taiwan receives as the Republic of China are confined to very small states, themselves on the margins of the international system. In contrast, Taiwan’s paradiplomatic reach is dramatic in the status of her state partners and in the sheer numbers of her own paradiplomatic operations abroad. Similarly impressive is the number of major states (57) which maintain paradiplomatic missions on the island. In short, in spite of its economic clout and its strategic stature, Taiwan continues to engage the international system on two different levels; and it is the more informal, unofficial, paradiplomatic level which clearly provides for this controversial island’s most critical relationships. Of course, this speaks to the depth of the taboo of Taiwanese separation and the paramount urgency of the territorial integrity principle for mainland China. Still, these tables also reflect the very elasticity of the paradiplomatic mission. The nomenclature chosen can convey simply a non-governmental relationship so as to stress the distance between the emissary state and Taiwan. Note that some of the designations of foreign missions in Taipei are those of non-governmental bodies such as the Swedish Trade Council or the Spanish Chamber of Commerce. Others, perhaps less sensitive to mainland sensibilities, even go so far as to include The Republic of China in the registration of their offices in Taipei. Taiwan’s own offices abroad indicate a fairly common standard with an emphasis on trade, investment and cultural exchanges. In any case, both the paradiplomatic Taiwan missions abroad and the foreign paradiplomatic missions in Taipei carry on many the substantive diplomatic duties which are common to sovereign states. Taiwan’s unique position in the international system
is that it is able to follow established diplomatic protocols in some situations but must resort to paradiplomacy in most of its critical relationships with other states. Taiwan’s major activity in an international organisation is her membership in the World Trade Organization where she maintains a regular permanent mission, although it comes under the awkward title of the Special Customs Territories of Taiwan, Penghu, Kinmen and Matsu.

The Paradiplomatic Activities of Sub-National Island Jurisdictions

The non-sovereign small island jurisdictions across the globe represent as broad a tapestry as any we have examined thus far. Some of them are still in essentially metropolitan relationships with European states: the non-sovereign islands in the Caribbean, for example, are British, French or Dutch territories or very closely linked to the United States. Apart from the French administered island territories in the South Pacific, and the lonely British island of Pitcairn, the small islands of this region are in varying associated relationships with Australia, New Zealand and the United States. There are many small islands which are essentially municipal, county or occasionally provincial jurisdictions of mainland states. And, there are those European islands, the Danish and Finnish Home Rule territories and the ancient Crown dependencies of the Channel Islands and the Isle of Man with a very distinctive constitutional status.

Paradiplomatic practices are being established and developed in several of these islands and, like the regions of the European Union, these activities vary in terms of the primacy given to political and identity issues and a more modest economic and functional agenda. It may seem surprising that the Crown Dependencies, among the most historic of European jurisdictions and independent in so many respects, have not been drawn to separate representation beyond their shores. The British Home Office conducts whatever relations are necessary with Brussels or any other capital as issues arise. There has been no groundswell in these islands for a separate paradiplomatic network apart from these trusted good offices.

In some islands, however, there is a question of national island identity which has encouraged an international projection of the island in the establishment of paradiplomatic offices. The Faroe Islands are an example of the blend of identity and functional interests that make paradiplomatic representation attractive for many sub-national jurisdictions. The national question or the Home Rule question has dominated Faeroese politics throughout the post-war period. Following Maurice Duverger’s model of ‘overlapping or equally competing cleavages’ (Duverger,
1959, pp. 231-33), Faeroese political scientist Jogvan Mørkøre has argued that this question has been as divisive in Faeroese politics as the conventional social-economic state-market divisions on a familiar Left-Right continuum, thus producing a multiparty system with party formations based on ideological mixes across these two definitive issue-areas (Mørkøre, 1997, pp. 162-191). Following the German invasion of Denmark in April, 1940 the British occupied the islands and urged the Islanders to fly their own flag at sea rather than the Danish red and white cross (Schei and Moberg, 1991, pp. 40-41). The years of British occupation were for “all intents and purposes, a period of Home Rule” (ibid.), which paved the way for a Danish-crafted referendum in September, 1946 offering a choice between independence and some form of self-government within the Danish Realm. Though the vote was exceedingly narrow (5650 for independence against 5500 for union), the Danish government initially accepted the results as did the Faroese Løgting. But the Danes soon rescinded their position, the Løgting was dissolved and new elections resulted in a government in favour of autonomy within the Union. The result was the Home Rule Act of 1948 in which the Faroes were “a self-governing community within the Danish Realm.” enjoying a wide latitude of autonomy in domestic affairs, though foreign affairs and defence remained the prerogative of the Danish government in Copenhagen. The debate over independence was not abated, however, and in 1999 the Faroese government, now led by a coalition committed to independence, laid out a detailed schema for an independent Faroese state. One of the key chapters in this ‘White Book’ looked to the future international relations and security policy of an independent Faroese state.

TABLE II: EXPECTED DIPLOMATIC ESTABLISHMENT OF AN INDEPENDENT FAROES AS SET OUT IN WHITE BOOK OF 1999 -(Faroes, Government of, 1999: 75-77)

Reykjavik: Embassy.
Oslo: Embassy, accredited to Moscow.
Copenhagen: Embassy, accredited to Stockholm, consular office in Helsingfors.
London: Embassy, accredited to Dublin.
Washington: Embassy, accredited to Canada, Mexico and Central and South American states.
Brussels: Embassy, accredited to all European states, except Norway, Russia, Great Britain and Ireland: accredited to the European Union, OECD, WTO, NATO, OSCE.
New York: Permanent Mission to the UN, accredited to Asian and African states.
The Faroes currently maintain 3 representative offices: London and Brussels with diplomatic status and Copenhagen without diplomatic status. The offices in London and Brussels “…are located within the Danish embassies and the Faroese diplomats are formally accredited to the respective host nations as Danish diplomats working with Faroese affairs” (Isfeld, 2006). The Faroese missions could be housed in another location though they would still be regarded as part of the Danish Embassy. This arrangement is not unlike the position of the Canadian minister in the British Embassy in Washington in the years following World War I. And it is an arrangement in keeping with the Danish practice of providing means and channels for Faroese representatives to speak directly to third parties on issues of importance to the Faroes (Olafsson, 2000, pp. 127-29).

Moreover, this paradiplomatic activity reflects further changes in the relationship between Torshavn and Copenhagen. On July 29, 2005, a new law involving the Islands’ external relations came into effect. It allows “the Faroese government to enter into negotiations and conclude treaties with other states and international organizations without previous consent from Denmark regarding all areas that are under the Faroese authorities … The Faroes can accordingly negotiate and conclude on its own (my italics) a bilateral treaty with another state regarding trade, culture, fisheries or any other business where the legislation and execution in the Faroes lies with the Faroese authorities” (Isfeld, 2006). This gives considerable substance to a Faroese paradiplomatic network and is a clear demonstration of shared responsibilities between sovereign and sub-national governments even in the sensitive areas of foreign policy typically seen as exclusively the prerogatives of the sovereign state (Olafsson, 2000, pp. 127-29).

There is a similar permissive latitude in the case of the other Danish Home Rule island territory, Greenland, though there has not been a comparable 50-year debate on the issue of home rule or independence. Greenland representatives have a similar power to negotiate directly on issues within the purview of the Home Rule Government (Larsen, 1992, pp. 219-20; Motzfeldt, 1997, pp. 193-94). Greenland maintains Representative Offices in Copenhagen and Brussels, the latter a direct monitoring base of EU developments that could directly affect the island (www.Nanoq.gl/english.aspx). Both the Faroes and Greenland host consulates from major European states. There are 9 consulates in Torshavn: Finland, France, Germany, Iceland, Italy, Netherlands, Norway, Sweden and the United Kingdom. There are also 9 consulates in Nuuk: Belgium, Canada, Finland, France, Germany, Iceland, Netherlands, Norway and Sweden. Moreover, both Greenland
and the Faroes sit as separate members of the Nordic Council of Ministers. (The three Baltic states have observer rights.) This participation in an important intergovernmental organization allows for relations with other member states and assures both territories of a genuine role in regional issues of importance to them.

The case of the Åland Islands is particularly interesting. Its status is unique since it is rooted in international law as the consequence of a decision of the League of Nations. Given the many particular jurisdictional guarantees which the Ålands can claim under the Autonomy Act with Finland (Myntti, 2002, pp. 107-124), the Islanders had the right to determine whether or not they would join the European Union. In theory, Finland could have acceded to EU membership while the Ålands stayed out. Their autonomous status is also reflected in their separate membership in the Nordic Council, a privilege which they share with the Danish Home Rule territories. They are then in a position to reap the benefits of direct relations with their regional partners (Anckar and Bartmann, 2000).

However, their situation with the European Union is not as satisfying as initially expected. The Ålanders were able to extract some critical derogations from Brussels during the accession negotiations, particularly on the economically critical issue of continued duty-free shopping on Åland ferries (Scarpulla, 2002, pp. 138-41; Jansson, 2002, pp. 201-12). Duty-free arrangements were abolished elsewhere in the European Union space and this concession was certainly significant and contributed immensely to the 74% vote in favour of membership in the November 1994 referendum (Åland Legislative Assembly). However, since this initial success, Islanders have become more disenchanted with the Union over a number of issues that are deemed important to their way of life and even their economic well-being. The first EU negative decision was the banning of traditional nets by Island fishers, a decision that applied across the EU. This was followed by the abolition of spring duck hunting and most recently the banning of snus, a Swedish chewing tobacco, which is allowed only in Sweden, a special derogation to Stockholm and (until now) the Ålands. Snus is a habit enjoyed by many Islanders, even though Finland accepted the ban on the mainland. Since Finland cannot change laws covering health in the Ålands, the parliament in Helsinki has no power to change the law on snus. The real problem here is one central to our discussion: a lack of direct representation. Though there is an Åland representative presence in the Finnish delegation in Brussels, the Åland Islands cannot represent themselves directly in Brussels on issues which are exclusive to them or primarily affecting them. In an angry reaction over the
snus controversy, Britt Lundberg, the Ålands head of EU affairs, has threatened to use the power to veto any Finnish international treaty and the threat implies that Åland will thwart Helsinki’s commitment to revive the moribund European Constitution when Finland assumes the rotating presidency of the European Council later this year (Rennie, 2006). While the Åland Islands maintains representatives in Stockholm, Helsinki and Brussels, it is a rather “toothless” arrangement if Åland cannot make its own case directly. The European Court in Luxembourg will hear only from member states, clearly a provision that denies the regions a capacity which is the very logic of paradiplomatic representation.

Neither the Faroes nor Greenland is subject to such EU edicts. The Faroes did not join at the time of Danish accession and Greenland seceded from the EU in 1985, the only territory yet to do so, after achieving Home Rule government in 1979. The Danish permissive policy, to include Faroese and Greenlandic representatives in negotiating arrangements which directly affect their interests (e.g., on the Nordic Council), is an optimal and positive template for small sub-national jurisdictions. It speaks to the very purpose expected of paradiplomatic activity among sub-national governments, an opportunity to reach out and address their particular interests while remaining inside a metropolitan relationship which offers many benefits to the citizenry of these territories.

The efficacy of regional institutions as channels for the international outreach and representation of sub-national or non-sovereign territories is particularly well established in the Commonwealth Caribbean. CARICOM, the Caribbean Community, has 15 member states which includes the very small island of Montserrat. If, at one time, Montserrat contemplated independence, any prospects were dashed by the 1995 eruption of the Soufriere volcano which destroyed the capital, Plymouth, and forced the emigration of 8000 islanders, two thirds of the population. Some have returned, but the island’s habitable space is now confined to a small section of the northwest. Soufriere erupts regularly and the island has been continually hit by hurricanes. In short, the status of Montserrat as a British overseas territory is unlikely to change. The same may be said of the other very small British islands in the Caribbean: Anguilla, the British Virgin Islands, the Cayman Islands and the Turks and Caicos Islands. Along with Bermuda, where independence is being debated, these four small island territories are associate members of CARICOM. Anguilla, Montserrat and the British Virgin Islands are also among the 9 full members of the Organization of Eastern Caribbean States. Between these two major regional bodies, the smallest non-sovereign islands have an extensive ‘diplomatic reach’ which largely mitigates the need and the appeal of
sovereignty. Moreover, the OECS has its own diplomatic missions in Ottawa and Brussels which allows Montserrat and the other very small island members a direct diplomatic channel to the outside world. CARICOM maintains a permanent observer mission to the UN in New York which is another channel of outreach for its non-sovereign members and associate members. These are generous and practical measures in keeping with a spirit of flexibility concerning status and privileges for non-state jurisdictions.

Bermuda stands apart from the other British overseas territories in the region since independence has been a matter of domestic debate for some years. In the referendum of August 16, 1995, the independence option was defeated, but largely because the parties could not agree on the appropriate vehicle for achieving independence. The Progressive Labour Party, which has long advocated independence, subsequently won two national elections and in 2004 Premier Alexander Scott established the Bermuda Independence Commission (BIC) to revisit the issue. The Commission was chaired by Bishop Vernon G. Lambe and its Report was published in August 2005. The Commission’s work involved wide-ranging consultation with the British Government, the United States Department of State, Canada, the European Union, and various countries of the region (Bermuda Independence Commission).

At present, the United Kingdom is responsible for Bermuda’s external affairs both as the island’s interlocutor with other states and its representative in major intergovernmental associations apart from CARICOM. In the current arrangements, however, Bermuda does have input into issue-areas which directly impact on the island. The Bermuda Independence Commission noted these provisions in their 2005 Report:

“Britain, in negotiating a treaty on Bermuda’s behalf, receives input from the Bermuda Government regarding matters affecting Bermuda and, in turn, the British Government keeps Bermuda appraised of the progress of the negotiations. At times Bermuda representatives are present as observers. The British Government has delegated some authority for certain treaty negotiations to Bermuda through the 1968 Entrustment. With greater frequency, Ministers of the Bermuda Government are, with prior approval, thus permitted to negotiate certain agreements, provided that they keep the British Government informed. One example is the Tax Convention that Bermuda was allowed to negotiate directly with the US” (BIC, 2005, p. 17).
These arrangements approximate those in place for the Danish Home Rule territories. On the other hand, Bermuda has not sought a high profile network of paradiplomatic representation. Bermuda maintains tourist offices in Atlanta, Beverly Hills, Boston, London, New York and Toronto. Unlike other British small island overseas territories (Anguilla, British Virgin Islands, the Cayman Islands, Falklands, Montserrat, the Turks and Caicos and St. Helena), Bermuda does not have a Representative Office in London (www.embassies.com). However, there are 14 consulates resident in Hamilton: Austria, Belgium, Canada, Denmark, Finland, Germany, Ireland, Italy, Jamaica, the Netherlands, Portugal, Switzerland and the United States.

Independence for Bermuda would then mean virtually starting from scratch. With this in mind, the Bermuda Independence Commission envisaged two options for the establishment of a Foreign Ministry and diplomatic staff. It is interesting to compare these projections with those of the Faroese White Book of 1999 discussed above. Option One [total projected annual costs: $1,336,000] would upgrade the Tourism Office in New York to a diplomatic mission along with the establishment of an embassy in Washington and High Commissions in Ottawa and London. Bermuda’s relations with the European Union would be handled from either Bermuda or London. Bermuda would join the UN and its lead Agencies and the Commonwealth (BIC, 2005, pp. 43-44). Option Two [total projected annual costs: $3,051,000] also expects that Bermuda would join the UN and its Agencies, the Commonwealth, possible full membership in CARICOM if it did not involve the Caribbean Single Market and Economy or the Caribbean Court of Justice (BIC, 2005, pp. 44-45). Independence could mean membership in other agreements such as the North American Free Trade Agreement, the Organization of American States, the World Trade Organization, the Free Trade Areas of the Americas, the Inter-American Development Bank, and the European Union’s African Caribbean Pacific organization. Overseas missions would be established in Washington, Ottawa, New York, London and Brussels. The Report suggests that, in the many countries where Bermuda would not have a mission, it would continue to rely on the United Kingdom to represent Bermuda citizens and interests and the reimbursement costs of these services are factored into the Report’s projected costs of independence. The Report is confident that, in the end, the costs of independence “would not be outside the affordability of Bermuda” (BIC, 2005, p.59).

Of course, costs and benefits cross a broad range of issues. In response to the Report, the Royal Gazette noted that the issue of a British passport was “glossed over”, a privilege which
presently gives Bermudians the right to live and work anywhere in the European Union (Royal Gazzette, 16/11/05). “And,” the Gazette warns, “once it is lost, it would almost certainly be gone forever” (ibid.). But the Gazette also notes that: “For some black Bermudians, in particular, Independence represents a final act of freedom” (ibid.) This echoes the clear symbolic priority in the Report for the Progressive Labour Government:

“Some Black Bermudians associate Bermuda’s current colonial status as being only slightly removed from its history of slavery and segregation. An advantage for them is the logical and necessary step towards full emancipation. This may be a difficult concept for some in the White community to grasp; but, until they do, it is nigh impossible to have a meaningful debate on the subject. . . . There is a significant sector of the Bermudian population who feel that full emancipation, full adulthood and full equality may only be achieved when the last vestiges of colonialism have been removed” (BIC, 2005, pp.61-2).

Clearly, this debate would not be conducted in most of the small non-sovereign islands subject to metropolitan relationships. But in Bermuda it lies at the core of the question. A detached assessment of Bermuda’s status would suggest that the island’s current relationship with the United Kingdom is largely beneficial, even in terms of external links and overseas representation. Yet it is precisely in this area, that the Report concludes clear gains with independence: “A distinct advantage to an independent Bermuda could be the value of international relationships and organizations and the expertise available to emerging nations” (BIC, 2005, p. 62). Clearly the case for paradiplomatic outreach within a continuing metropolitan relationship has not been conclusive in the Bermuda debate.

In the South Pacific, there is a pattern of permissive arrangements both in terms of regional intergovernmental bodies and in the particular latitude granted by New Zealand with the status of free association. The Pacific Islands Forum represents the Heads of Government of all its 16 members. The Cook Islands and Niue, both states in free association with New Zealand, are full members (Pacific Islands Forum). Most remarkable for this discussion is the international legal personality of these territories. New Zealand officially describes the Cook Islands as “a self-governing state in free association with New Zealand” (Cook Islands Country Paper, p. 7). New Zealand cannot make laws for the Cook Islands … the Cook Islands Government has full executive powers … The Cook Islands remains a part of the Realm of New Zealand (albeit a separate part) …
Cook Islanders retain New Zealand citizenship (and do not have additional Cook Islands citizenship” (ibid.).

The separate international legal personality of the Cook Islands, given their New Zealand citizenship, truly illustrates the elasticity and innovation possible within the context of “dependent relationships.”

### TABLE III: MEMBERSHIP OF THE COOK ISLANDS IN INTERNATIONAL ORGANIZATIONS

Cook Islands Diplomatic and Consular Corps, 2005: www.cookislands.de

- Asian Development Bank
- Food and Agriculture Organization
- World Health Organization
- United Nations Educational, Scientific and Cultural Organization
- Commonwealth (Associate member)
- UN Economic Commission for Asia and the Pacific (Associate member)
- Pacific Islands Forum
- Secretariat of the Pacific Community

Moreover, the Cook Islands has established separate diplomatic relations with over 20 states at Embassy or High Commission level. The Cook Islands High Commission in Wellington is also accredited as the Cook Islands High Commission to Australia, Papua New Guinea and Fiji. The Cook Islands Embassy in Brussels is also accredited to the European Union. Moreover, there are no less than 23 states (including Australia, New Zealand, USA and the European Union) with full diplomatic relations accredited to the Cook Islands at the Embassy or High Commission level. There is also a supplementary consular network with Honorary Consuls for the Cook Islands in Honolulu, Los Angeles, Oslo, Sydney and a Consulate-General in Auckland. There are Honorary Consuls in Avarua Town for the United Kingdom, France and Germany and a Warden for the United States. The Cook Islands has independently concluded treaties with a number of states including China, the United States, the
Republic of Korea and France (Cook Islands Diplomatic and Consular Corps, 2005). This very small state is also an independent signatory to several multilateral conventions, including the Cotonou Agreement between the ACP states and the European Union.

A similar status is enjoyed by Niue, also a self-governing state in free association with New Zealand, but on a more modest scale. New Zealand has a High Commission resident in Alofi, Niue and, astonishingly, Niue maintains a High Commission in Wellington and shares an ambassador and embassy with the Cook Islands in Brussels, though the two states are accredited separately (www.embassypages.com).

Even in Tokelau, New Zealand will only act on behalf of this tiny territory if instructed to do so by the Government of Tokelau. This was precisely the arrangement for Swiss representation of Liechtenstein until the late post-war years, an arrangement which many jurists insisted at the time to be one that unequivocally established the sovereignty of the principality (Farran, 1960).

The Cook Islands has not presented itself to the international community as a sovereign state, though it behaves in exactly that fashion in its international relations. Cook Islanders are New Zealand citizens and that citizenship is clearly of value in itself, given the large Cook Islands population in New Zealand. The islanders are able to enjoy all the prerogatives of sovereignty with the most permissive and generous arrangements for international relations available to any dependent territory in the world. Indeed, to return to our opening historical discussion, the Cook Islands today enjoy an official diplomatic reach beyond the smallest European states prior to 1990, even though the European micro-states were classified, at least formally, as sovereign entities at the time.

In short, these are arrangements far beyond what is understood to be the various practices of paradiplomacy. When a territory has the separate and independent legal capacity to enter into full diplomatic relations with other states, to send and receive missions at the embassy level, to negotiate bilateral treaties, to be a signatory to multilateral conventions, to participate independently in intergovernmental organizations, especially when those organizations’ membership is confined to sovereign states, then what is possibly left to meet full international legal personality of sovereignty?

Only UN membership remains absent for the Cook Islands, but this was never a litmus test unto itself. Until very recently, some states did not apply for UN membership, even though their sovereignty was not in question: (Western) Samoa achieved independence in 1962 but did not join
Conclusions

Admittedly, the 21st Century international system is more universal and inclusive in that full international legal personality is shared by jurisdictions which would have been considered improbable and absurd as sovereign states even in 1960 at the beginning of the mass suffrage of colonial territories. And, certainly, the apparent ambiguities of status and international prerogatives beyond decolonization have reinforced an ongoing trend to universalism and inclusiveness, a trend which is dramatically reflected in the expanding opportunities and practices in the antechamber of paradiplomacy.

Across this comparative and historical view of paradiplomatic practices there is a consistent pattern of muddied credentials for access to and status within the central international channels of diplomacy. Moreover, there are very different kinds of entities which we find in this antechamber and it is important to retain a clear sense of these distinctions when assessing the phenomenon of paradiplomacy in general. Some of these distinctions have been noted in the current literature on paradiplomatic practices among sub-national units in federations and regions in the European Union. There are jurisdictions which entertain ‘national’ or ‘identity’ agendas with pressing political objectives: Québec, Flanders, Catalonia, and to some extent even certain small island sub-national entities such as the Faroes. Most others engage in paradiplomatic practices for relatively modest functional objectives, and these efforts are almost entirely focused on information: “... they gather information concerning (EU) legislation; they exchange information in subnational networks; they mediate information to their respective home territories, and they provide information to (EU) decision makers” (Marks et al., 2002, p. 2).

Are some of the entities more likely to develop or win paradiplomatic practices than others? Clearly those jurisdictions with a distinct identity agenda can be expected to pursue a paradiplomatic outreach aggressively. And small islands, because of their physical separateness and insularity, are obvious candidates for the same reasons that they gained self-government and even constitutional separateness. However, all sanctioned paradiplomatic practices function within the context of a national or metropolitan relationship and with the consent of the central government. To be sure, agitation and political pressure for greater status recognition and external access from the jurisdiction itself may well result in the central government moving cautiously beyond its own
initial comfort levels. But it is a sphere which is only accessible if the metropolitan or central
government agrees. It is not some new and swampy terrain of international relations which
subnational governments can enter by stealth. It is not a case of a state being ambushed by its
dependent units and suddenly, awkwardly and embarrassingly, discovered in the antechamber by
sheer chutzpah. No, there are guards at the door and credentials are checked; only those with a
metropolitan stamp of approval are admitted. The Faroes mission in London, the Montserrat
delegation at CARICOM, and the Cook Islands Embassy in Brussels function within the legitimacy
of external representation as acknowledged by their metropolitan centres and therefore by the
international system itself.

Paradiplomacy is not a new and innovative sphere of international relations, much less one
that undermines the finality of sovereign states’ judgements on international status and access.
Paradiplomacy is not a breach of conventional distinctions in diplomatic practice as much as a
redefinition of the frontiers of domestic authority within sovereign states, conceding practices which
central governments in some cases have come to accept and even promote for their dependent
territories. Indeed, in those cases where paradiplomacy seems to be most advanced and
conventional distinctions of status most blurred, the new parameters of international engagement
and outreach are determined in the end where they have always been determined: in the capitals of
the sovereign members of the international system.

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Abstract
The Danish island of Bornholm, in the Baltic Sea, has been swept into whirlwinds of global changes, affecting all sectors of the island’s economy, as well as every layers of society. The challenges provide both serious threats and great opportunities. Increasing global competition, not the least from the new EU accession states in the Baltic Sea Region, is forcing a traditional tourist destination such as Bornholm to reconsider and reinvent itself. The paper, based on a project at the Centre for Regional and Tourism Research, focusing on globalization and island tourism development, identifies the evident changes taking place on Bornholm, locates it in the larger context of global change and Danish tourism development. Highlighting the changing global and regional market conditions, it is argued that the tourism industry and the destination managing organization is facing a giant, but necessary task to transform the traditional and conservative tourism business, in order for the island to mobilize and capitalize on the quality assets – nature, arts, crafts and history - that could secure Bornholm as a Global Island Destination.

Key words: Globalization, Islands, Destination Development

Introduction
Traditionally, actually since the latter part of the 1800’s, tourism has been an integral part of the Bornholm economy and society. Equally important, tourism has contributed to the positive images of the island. Bornholm is without doubt one of Denmark’s most distinct and popular tourist destinations. With the ongoing globalised development, as evident in the Öresund Region and the Baltic Sea Region, new market opportunities are opening up. However, a closer analysis of the state of tourism on Bornholm indicates that there is a serious need for rethinking the destination as a whole, and not the least the concrete tourism products and services being offered. If not, Bornholm risks being marginalised in the increasing and sharpening competition among old and new destinations in the Baltic Sea.

This paper, takes as its point of departure some of the overall trends that characterises the general development of tourism, and are of utmost importance for the tourism industry to strategically relate to. The second part, describes briefly the last ten years development of tourism in Denmark and the strategic visions that have been developed strengthen the country’s position as a major European destination. In the third, and main part, the development of tourism on Bornholm since 1995 is analysed, during which the opening of the Öresund Bridge in 2000 stands as the single most important and decisive event. In the fourth and final part, conclusions are drawn based on the
frame-work and analysis, which leads in to a concluding discussion on the challenges facing development of tourism on Bornholm in a Global Age.

Global Trends and Tourism Development

The dominating megatrends that are usually brought forward when discussing the ongoing development of society – immaterialization, individualization, globalization and digitalization – are probably more evident in tourism than in any other global societal phenomenon. With its focus on material as well as immaterial experiences, the development of tailor-made and theme-based activities, the establishing of low-cost airlines to existing and not the least to new destinations, as well as the breakthrough of ICT for offering tourism services and products, tourism actually stands out as a major driving force in the general development of society.

Sheer volume speaks for itself. In spite of the last decade’s major global events – war, terror and SARS – the picture is clear: the number of travellers and tourism as an industry are going through a rapid and dynamic development. In 1950 the number of international arrivals was 25 million, in 2003 ca. 700 million, and according to World Tourism Organisation (WTO) the number should reach 1 billion in 2010 og 1.5 billion i 2020. In 1998 the international tourism amounted to 10 % of the global GDP and over 200 million jobs. WTO predics that the value of tourism and the number of travellers will increase tourism’s contribution to the World Economy in the coming ten years from 1.5 billion til 9.5 billion USD. This development is based on the falling prices on airlinetickets due to the success of the low-cost airlines (in 2004 they make up about _ of the total travelling market) the increased use of ICT and the growth of a new global middle class.

However it is not only the numbers and economic impacts of tourism that is undergoing major changes. In the special report - Travel – The New Golden Age - based on recent and extensive material from WTO, the Newsweek magazine (April 2004) investigated the ongoing changes in travel marktes and tourists behavior. Most noteworthy is the rapidly growing importance of Asia, aprticularly China, not only as destinations, but also in terms of their potentials for outgoing travellers and tourists. Certainly it is primarly the near markets, that for the time being is benefitting from this development, but as incomes and experiences grow, undoubtedly European destinations will benefit from an increasing flow of rravellers and tourists from Asia. A similar development is expected with regard to the new Eastern European market.

Future and trend analyses of tourism, clearly indicates that one of the most important customer segments in the future will be the group of people over 50 years. Characteristic for this group of people, is that they like to travel, has hight purchasing power, will live longer, are healthier and more active than before, and has demand for quality and experiences. Another customer segment of growing importance, is the middle aged, middle income couples with grown up children. This is confirmed in the visionary document from the Danish Tourist Board”2010 – Fremtidsbilleder” (2004), in which it is stated that people in the age group 50+ will increase in Europe by 27 % between 2000-2010, while the age group 15-49 år is expected to drop by 10%.

The growing trend of individualization in society is affecting the tourism sector in many different ways. Individualization is also closely interrelated to the ongoing technological development, which in the case of tourism means that more and more travellers use the Internet to plan, package, order and pay their trips. This is expressed in the increasing demand for tailor-made travel
experiences based on various special interests, such as wellness, eco tourism, roots tourism etc. According to the WTO, the fastest growing tourism segment today is ‘the cultural education tourist’, to whom travelling is all about getting a learning experience. “A growing number of travelers are trading sunscreen for spiral notebooks and foregoing relaxation for mind expansion”, as the report from Newsweek vividly describe it. In Spain this has led regional governments to shift the strategic focus of tourism development from beaches to historical attractions and places. Furthermore, a growing number of cultural institutions around the world today offers, as part of travel arrangements, courses with qualified guides, e.g. The American Museum of Natural History Discovery Tours, which offers ”Learning holidays” to various parts of the world.

**Danish Tourism in the Age of Global Competition**

Since the mid 1990s, Danish tourism has been under a lot of pressure. In the period 1995-2002 the number of international bednights dropped by 14%, and for the dominating category of German bednights the decline was 25%. The situation has stabilized since 2002, and the German and Norwegian market shares have slightly increased. At the same time, it is evident that the domestic market is growing in importance. However, this does not change the general situation that Denmark is an international destination. About ca. 55 % of the bednights are international, which is higher than the rest of the Nordic countries, and actually at the level with a popular international destination such as Ireland.

Another positive trend in recent years is that employment in the primary tourism sector grew by 8% in 1997 to 2002. However, as the Danish Tourist Board warns: “This does not change the basic fact that Danish tourism industry is at a challenging crossroad, which among else is expressed in the low profit margins of the businesses.” High VAT, increasing wages and a strong exchange rate for the Danish currency, have resulted in a cost structure which has had a negative impact on the competetiveness of the tourism businesses.

Based on an analysis made by the World Tourism and Travel Council (WTTC), the Danish Ministry of Industry and Economy estimated that at price level of tourism in Denmark is at level with the other Nordic countries, but 15% higher than in other EU countries, and up to 90% higher than the East European tourism markets. The report also concludes that the productivity in the Danish tourism industry (measured as the gross value growth per employee) is 290.000 Danish crowns, compared to 470.000 Danish crowns in the industry as a whole. (Erhvervs- og Økonomiministeriets ”Omkostnings- og strukturanalyse af dansk turisme” 2004).

With the ongoing international development and trends towards increased competition, lower prices and multitude of new destinations, Danish tourism is facing several challenges. Certainly, in an age of gloval war and terror, Denmark has a competitive advantage as a peaceful and secure destination, but at the same time the competition from the Baltic Sea States is growing and sharpening. ”If Danish tourism is to secure a strong development in the future, we have to take into account a very unstable market situation and new competitors. Hvis dansk turisme skal sikre sig en stærk udvikling i fremtiden, skal der tages højde for en usikker markedssituation og nye konkurrenter (DT ”2010 – Fremtidsbilleder” 2003).

Facing the challenges means above all the ability to relate to the changes in customer segments and preferences, and to offer new products and services of highest quality. It is no longer a simply
question of the Danish and German families going on beach holiday to the same destination every summer. “There are fewer of the traditional loyal tourists, which faithfully returned to the same destination year after year, as the case was with the Germans on the west coast of Denmark in the 1970’s and 80’s”. (DT 2003, s. 26).

The primary goal is to reach the growing 50+ segment, which will be a particular challenge for those destinations traditionally based on family tourism. "For Danish tourism in general the trend of a growing senior market means that we have to work more strategic and focused with other target groups than families with children, not the least on the German market.” (DT 2003, s. 30). Customization is going to high on the agenda: "For Danish tourism this means that we shall have offers for the tourist who wishes to 'switch off' (quite, peaceful, relaxation etc.) as well as to the tourist who wishes to be active (action, experiences, events etc.) (DT 2003, s. 27).

In May 2004, the Danish Tourist Board presented its grand vision for Danish tourism "Experiences in Growth". According to this vision, Denmark will by the year 2010 be recognised as a place for recreation, activities and learning, and in its position as the most attractive destination for coastal tourism in Northern Europe, attract tourists from the near markets Sweden, Norway, Germany and Great Britain, but also to an increasing degree from Poland, the Baltic States and Russia, as well as from Asia.

The Changing Face of Tourism on Bornholm

For any island community, physical accessibility is a fundamental precondition for tourism development. The Danish Island of Bornholm is linked by all-year-long ferry routes to three countries: Denmark, Sweden and Germany. Traditionally it has been the passenger and freight route between the major city of Bornholm, Ronne, and the capital, Copenhagen, providing the main life line for the 43,000 islanders. In addition, there is a daily flight route between Bornholm and the Danish capital Copenhagen. Although, there have been reductions in number of departures and capacity during the last decade, there have also been considerable investments. Not the least, the construction of the Öresund Bridge (opened in 2000), connecting the Danish capital Copenhagen and the southern Swedish city of Malmo, has had a profound impact on Bornholm.

The construction of the Öresund Bridge has been combined with other major infrastructural investments in the region. This includes the opening up of the Swedish railway connection between Malmö and Ystad for Danish Rail, making it possible to transport passengers from Copenhagen to the Bornholm ferry terminal in Ystad in less than one and a half hour. Furthermore the E65 highway between Malmö and Ystad has been improved and extended in order to better handle the dramatic increase in traffic between Bornholm/Ystad and Copenhagen. Finally, in 2000 a fast ferry between Rønne/Bornholm and Ystad was introduced.

As a result, today it is possible to travel by car, boat, train or bus between Bornholm and Copenhagen in three hours, which is half of the travelling time before the Öresund Bridge. The fast ferry also makes it possible to make daily trips between southern Sweden and Bornholm. As a consequence, there has been a strong increase in the number of people travelling to and from Bornholm. Measured in terms of arrivals to Bornholm, there has been an increase from 755.000 in the year before the opening of the bridge 1999 to 835.000 in year 2003. A closer examination shows that it is the Rønne-Ystad route that has seen the most dramatic development, from 363.000 to
578,000 arrivals, almost 60% increase. This means that the Ystad route today amounts to ca. 70% of all arrivals, compared with less than 50% the year before the bridge was opened.

Table 1  
*Arrivals, routes and means of transportation 1998-2003*

As indicated by the statistics of arrivals, the number of travellers (residents and visitors) to Bornholm increased with 80,000 in the period 1999 to 2003. This is largely due to an increase in the number of visitors from outside the island. Between 2000-2003 this group increased with 64,000, accordingly making up 70% of all the arrivals to Bornholm.

Table 2  
*Arrivals of visitors and residents 2000-2003*
Looking at the bednights statistics for 1993-2003, it is evident that a profound change regarding the origin of the visitors has taken place over the last decade. In 1993 the category of international visitors amounted to _% of all bednights on Bornholm. Ten years later, this category is down to 50%. During the same period, the category of Danish visitors has increased strongly and make up half of the bednights today, compared to _% ten years ago. As a consequence Bornholm has reached the same level of domestic market share as Denmark in general, but the increase that Denmark is experiencing in the number of international bednights, is not occurring on Bornholm.

**Table 3  Bednights per Danish and International visitors 1993-2003**

By subdividing the category international bednights into nationalities, the increase of Danish visitors becomes even more evident. Besides the increase in Danish bednights, the only increase that has taken place 1993-2003 is for Norwegian and Polish bednights. In the same period the former very strong markets Germany and Sweden have been drastically reduced. The share of German bednights have declined by 1/3 and the Swedish by 60%. In total, this means that the German and Swedish market share of bednights have dropped from 67% to 46% in ten years.

The development is obviously not affected to any large degree by the Öresund Bridge, except for the tendency of more Danes, Norwegians and Polish, while the number of German and Swedish visitors continues to decline. Thereby Bornholm departs from the general trend in Denmark with more German bednights. Actually the year 2002 marks a decisive moment in Bornholm tourism, when the number of Danish bednights outnumbers the German for the first time in two decades.
Paradoxically, the increase in numbers of visitors to Bornholm has not resulted in a growth for the accommodation sector. On the contrary, between 1997-2003 the sector lost 90,000 bednights, a decline by 6%. In particular camping and summer houses has lost out, and is responsible for almost 90% of the reduction of bednights in the accomodation sector since 1997.

The evident changes in visiting patterns is also expressed i the number of days the visitors spend on Bornholm. In only five years 1998-2002 – the avarage length of stay fell from 8.4 to 6.8 days. A major conclusion to be drawn by the analysis is that an increasing number of the visitors coming to
Bornholm belong to the category of “visiting friends and relatives”. That is, visitors (Danish) that come to Bornholm for a shorter stay, often over a weekend, and accommodated by friends and family. This is without doubt, one of the most important effects of the Øresund Bridge for Bornholm, making day and weekend trips much easier than before the opening of the bridge.

**Table 6** Average number of days of stay 1998 - 2002

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<td>Days</td>
<td>8.43</td>
<td>7.32</td>
<td>7.73</td>
<td>7.3</td>
<td>6.8</td>
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Another change that can be highlighted is the tendency towards a longer season. Bornholm is an extreme high-season destination (juni-august), accounting for 75 % of the tourists in 2004 (compared to 58% for Denmark). However, between 1995 and 2003 the number of visitors coming in the shoulder season months of april/may and september/october increased from ca. 1/5 to _.

**Table 7** Number of bednights by months 1995 og 2003

The quantitative and qualitative changes in visiting patterns present the tourism business of Bornholm with several challenges. This is particularly the case for the accommodation sector, not the least for the hotels. Between 1993 and 2003 the number of hotels on Bornholm was reduced from 56 to 43, and the number of beds from 7,400 to 6,900. The crisis is also illustrated by taking a closer look at the development for the high season month of July shows that the number of hotel bednights has been reduced dramatically. Since 2000 there has been a reduction of 23,000 bednights, a decline of 16%. As a drastic measure, some hotels on Bornholm, in July 2004 reduced their prices by 20%.
Bornholm Tourism at the Crossroads

Based on the analysis of arrivals, visitors and bednights it is possible to conclude that tourism on Bornholm today is characterized by a very different visiting pattern. They who visit Bornholm today are:

- Increasing in numbers
- Every second person from Denmark
- To an increasing degree from Norway
- Stay to a lesser degree in the traditional forms of accommodation
- Stay a shorter time
- Come still mainly in the high season
- Come more often in the shoulder season months

These changes confirm the findings and conclusions made by Per Åke Nilsson in 2002 (Per Åke Nilsson “Turismeerhvervet på Bornholm – netværksarbejde og omstrukturering” 2002), namely:

- Increasing demand for weekend trips
- Fewer families with children under 15
- More free campers
- More individual and direct booking
- New demands for higher standard of accommodation
- Increasing demand and interest for cultural products (arts and crafts)

Undoubtedly, Bornholm is now for real beginning to experience the effects of the development of global tourism described in the first part of the paper. Most likely, the ongoing changes in visiting patterns, customer segments and preferences will continue and be reinforced in the coming years. At the same time, the competition from new destinations in the Baltic Sea Region will increase. The decisive question is what possibilities and resources the tourism industry on Bornholm has to face up to these challenges and develop a global island tourism destination?

Instrumental to the way these challenges will be handled is the actions of the destination managing organisation, Destination Bornholm, which is the umbrella organisation for the tourism industry of
the island. It has 70% funding from the industry, and additional public support from the Bornholm Regional Council. Destination Bornholm focuses on product development, marketing, competence development and tourist information. The overall vision is that "Bornholm will be the most visited holiday island for tourists from Denmark, Northern Germany, Sweden, Norway and Poland. Furthermore, Bornholm as a destination shall have top priority in the consciousness of potential visitors.”

Over the last years there have been successful efforts to create a joint Internet portal, that works as a marketing channel, co-ordinating online booking and sale, and as an overall branding of Bornholm as an island destination based on the values authencity, closeness, diversity and independence. To renew and reinvent tourism on Bornholm, the strategy of Destination Bornholm aims at developing attractive short-vacation products, and to collaborate with different producers of experiences within retail, restaurants and the diverse cultural sector. To the latter category belong craftsmen and artists, which have been supported through the establishing of the first regional arts and crafts Internet portal. Other special interests and customer segments being targeted are bicycle tourism and regional culinary heritage.

From a strategic perspective Destination Bornholm seems to be relating itself visionary to several of the predominating tendencies of development and the visions/strategies discussed initially from a global and Danish perspective, such as:

- Development of ICT as a tool/resource for tourists as well as the industry
- Customized product development aimed at thematized and tailor-made offerings
- Development of short vacation and shoulder season activities
- Product development in cultural tourism
- Establishing of alliances and network in the tourism sector
- Emerging initiatives towards the new markets, eg. Poland

In a similar way it can be said that, from a Bornholm perspective, Destination Bornholm ought to relate itself more strategic to other important tendencies of development, such as:

- Further initiatives in the new emerging markets, eg. The Baltic States
- Longterm initiatives towards the Asian/Chinese markets, by participating actively in the efforts made by the Danish Tourist Board
- Making Bornholm attractive for the 50+ segmentet
- Establishment of cross-sectorial alliances and networks
- In collaboration with existing insitutions actively aim at the "the cultural education tourist" (archeology, arts, crafts, geology)
- Securing higher quality in products and services
- Develop the knowledge base for strategic planning and policy
- Support to customer-driven innovation

These considerations are essential for the future development of tourism on Bornholm in a Global Age. At the present Bornholm tourism is at a crossroad, caught between on the one hand, a profound and dynamic development in global tourism and an innovative and pro-active destination managing organization and a few frontline businesses, and on the other hand, a conservative and change inert tourism industry, a public sector actor with limited resources and perspective concerning the potentials of developing tourism. The challenge is to capitalise on these
opportunities in a sustainable way. With a recently published comprehensive strategy for tourism development, Bornholm seems to be on the right way.
Island DNA:
Cultural Policy as a Building Block for Sustainable Islands

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Maui Community College, Maui, Hawai‘i
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ABSTRACT:

At first blush, the cultural policies of the islands of Iceland and Prince Edward Island are vastly different, reflecting the two islands’ jurisdictional differences: the national sovereign state of Iceland versus the sub-national province of Prince Edward Island within the federation of Canada. However, both jurisdictions are motivated by the underlying principle that goes into creating cultural policy: a deep-rooted understanding that their own distinct island cultures are in need of protection and are worth preserving. They both recognize that strong cultural policy ensures a strong identity, and that a strong identity means a strong jurisdiction — in terms of political and economic strength, and the survival of its people. However, comparing per capita spending in the two islands (Iceland’s $328.34 CAD, versus Prince Edward Island’s $57.53) serves to point out the greater importance Iceland places on culture: since Iceland is a sovereign state and has the most to lose, it invests significant resources in protecting it.

The paper explores the meanings of culture and identity, and the importance of “islandness” to island cultures. Why is Iceland’s policy concrete and full of detail, as a distinctly island culture, in comparison with Prince Edward Island’s short, generalized statement of intent? The paper looks at how these islands’ cultures have evolved, from their roots to today’s language and customs, government, legal and social systems. And it looks at how an island’s relationships with its mainland can influence its cultural policy; for example, without a “mother country” or “mainland” to fall back on, Icelanders know they can only depend on themselves. At the same time, they maintain strong links with the world in order to thrive, particularly in light of increasing globalization. As Srebrnik quotes Landes, “If we learn anything from the history of economic development, it is that culture makes all the difference” (Landes, 1998 in Srebrnik, 2000, p. 64).

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Island DNA: Cultural Policy Building Blocks in Iceland and Prince Edward Island

At first blush, the cultural policies of the islands of Iceland and Prince Edward Island are vastly different, reflecting the two islands’ jurisdictional differences: the national sovereign state of Iceland versus the sub-national province of Prince Edward Island within the federation of Canada. The disproportionate comparison of size of the two islands does not invite equal comparisons, either: the populations are approximately two to one, while their land masses are approximately eighteen to one. At the same time, both jurisdictions are motivated by the underlying principles that go into creating cultural policy. They recognize the need to balance the past (tradition and memory) with the future (innovation and creativity), creating a balance between rootedness (or “loyalty to self”) and openness to “other.” They know, too, that cultural policy “cannot be imposed from above,” but needs to “emerge out of specific local or community circumstances and needs” (INCP Inventory 2000). They both know that strong cultural policy ensures a strong identity, and that a strong identity means a strong jurisdiction — in terms of political and economic strength, and the survival of its people. “Any society, any nation, any province aspires to a strong identity. That identity is built to a large extent on culture” (PEI Cultural Policy 2).

But while Prince Edward Island’s cultural policy document, at eight pages in length, is general in nature: “a tool that will help government departments and our partners in the arts, heritage and cultural industries recognize and embrace the principles that govern our strategies and actions in this significant area” (PEI Cultural Policy 1) — focusing on the broad strokes, with words like “principles” and “commitment” — Iceland’s document, at twenty-seven pages, is
very specific. Indeed, in the introduction to Iceland’s policy, the closest thing to an overriding policy statement is the following: “Every single Icelander plays a part in the preservation and evolution of the national cultural heritage and its transmission to future generations. This is evident, for example, as regards fundamental elements such as the national language, Icelandic” (Iceland “Culture” 5). As we’ll examine more closely, Iceland’s policy is short on platitudes and long on concrete detail, a reflection of just how strongly Iceland values its culture. Why it does so, and in what ways this manifests itself in a distinctly island culture — looking at Prince Edward Island’s policy for comparative purposes — is the focus of this paper.

Both the Icelandic and Prince Edward Island policies recognize that culture is a difficult word to define and use. The word “culture” has its roots in the Latin “cultura,” meaning “the tilling of land.” Over the centuries, “culture” became more figurative in its meaning; in the mid-nineteenth century it was used to denote the “collective customs and achievements of a people” (Etymonline.com). One of the first benchmark anthropological definitions from Sir Edward Burnett Taylor, author of *Primitive Culture* in 1871, is the following: “Culture. . . is that complex whole which includes knowledge, belief, art, morals, law, custom, and any other capabilities and habits acquired by man as a member of society” (Taylor in Dunne 2). It has also become more complex: a twelve-point anthropological definition from 1944 refers to “social legacy,” individual and societal behaviour, “a way of thinking, feeling, and believing” (Kluckhohn in Dunne 2). In recent years culture has come to encompass “cultural industries,” defined by the United Nations Educational, Scientific Organization (UNESCO) as

those industries that combine the creation, production and commercialization of contents which are intangible and cultural in nature. These contents are typically
protected by copyright and can take the form of goods and services. . . Depending on the context, cultural industries may also be referred to as “creative industries,” sunrise or “future oriented industries.” (UNESCO, in Dunne, p. 3)

For most jurisdictions, cultural industries include printing, publishing and multimedia, audiovisual, phonographic and cinematographic productions, crafts and design, architecture, visual and performing arts, sports, manufacturing of musical instruments, advertising and cultural tourism (UNESCO in Dunne 3). The word is now incorporated into other concepts, such as those found in the terms “culture of dependency,” “cultural diversity,” “pop culture,” “culture shock,” “indigenous culture,” and “multicultural,” to name a few. As recently as 2005, Hiroshi Nakajima of The Pacific Society, in defining “bunka,” the Japanese word for culture, refers to the elusiveness of the term, and its ever-changing nature:

Some people say that bunka is the very best things around us. . . . Some other people say that bunka is our daily effort for better living. Others imagine only arts for bunka. . . . As in any culture, some of the most important words are among the most difficult to define precisely, and change their multiple nuances over time. (Nakajima 5)

In twenty-first-century Prince Edward Island and Iceland, the definition “the total way of life of a people” encompasses such basics as language, literacy, food, dress, religion, sport, leisure, heritage, and, of course, the arts. A common misconception is that culture means “the arts” or “high arts”; rather, the arts are a subset of culture.

How then do “islands” and “islandness” affect culture? Is island culture distinct from other cultures? And is islandness important to Iceland and Prince Edward Island culture?

The idea of “islandness” is at the heart of island culture. Being completely surrounded by
water is a condition that results in islanders viewing themselves as a separate entity from the mainland:

The Northumberland Strait has always been nature’s emphatic and unambiguous way of informing Islanders that they are a separate and unique people. Living on an Island inculcates a vivid and precise recognition of exactly who you are — and who you are not. Year in and year out, generation after generation, this singular geographic circumstance dictates both a sense of unity and separateness” (Weale 82)

Weale goes on to compare the topographical shoreline with the “psychological shoreline that has been internalized in the consciousness of Islanders, and informs every aspect of life in this province.” Islanders feel a very strong connection to their land, as their thoughts and feelings and imaginations and souls have been shaped by the bounded nature of their geography. Indeed, their identity has come to depend on it. And, as traditional cultivators of the land, perhaps Islanders feel their culture and island identity more keenly, being closer to the literal meaning of the word.

The concept of islandness was never so publicly articulated than during the “fixed link” debate in the 1980s and 90s, which pitted the supporters of a fixed crossing to the mainland against those who wished to preserve “the island way of life.” According to Prince Edward Island historian Ed MacDonald,

It was a passionate and divisive debate that ran the gamut from physics to metaphysics. For idealists it was, at heart, an exploration of “islandness”; for cynics, a dynamic exercise in federal-provincial relations in the post-Keynesian dispensation of Reaganomics.

But as consummation neared, somewhat unexpectedly, the economic grail of guaranteed connection with the Mainland collided head-on with another powerful mystique, the physical insularity of islandness as a cherished determinant of cultural identity. (MacDonald 2006)
One would think that notions of “identity” would be a simple matter: such as when a child writes his or her name and address, beginning with “I” and moving out in concentric circles to end usually with “The Universe.” But as we gain life experience — which inevitably comes with a bigger and bigger suitcase — we realize that identity seems to be more complicated or nuanced than it was when we were young. We all carry more than one identity. For instance, the first time the present author was referred to as “H—’s mom” was a life-defining moment.

One becomes aware that “belonging” and “identity” are not cut in rock, that they are not secured by a lifelong guarantee, that they are eminently negotiable and revocable; and that one’s own decisions, the steps one takes, the way one acts — and the determination to stick by all that — are crucial factors of both. (Bauman 11)

As anthropologist Stuart Hall notes, “What does anybody in the world know about an English person except that they can’t get through the day without a cup of tea? But where does it come from? Ceylon — Sri Lanka, India... There is no English history without that other history” (Hall 49). But much attention continues to be paid to the importance of having an identity, because, if you do not have one, somehow you are considered to be less rooted, more ephemeral, and ultimately less likely to survive in a globalizing world. Indeed, defending one’s identity has driven people to commit horrendous atrocities. Bauman writes, “‘National identity’ was from the start, and remained for a long time, an agonistic notion and a battle cry. ‘Belonging’ would have lost its lustre and seductive power together with its integrating/disciplining function had it not been consistently selective and constantly given flesh and reinvigorated by the threat and practice of exclusion (Bauman 21–22).”
According to Stuart Hall, old notions of identity defined personal identity as “the ground of action: a notion of the continuous, self-sufficient, developmental, unfolding, inner dialectic of selfhood... It contains the notion of the true self, some real self inside there, hiding inside the husks of all the false selves that we present to the rest of the world” (Hall 42–3). But recent “theoretical decenterings,” from Marx’s class structure and Freud’s psychoanalysis to Saussure’s linguistics and feminists’ issues of power and gender — even the blurring definitions of gender — have led to a “fragmentation and erosion of collective social identity” (Hall 44). No longer can they be thought in “the same homogenous form” (Hall 45). Identity is not a closed loop; rather, it is “always in the process of formation.”

It can also be defined in terms of what you are not: “the Other” (Hall 48). And this is where islandness comes in: islands by their definition are not the mainland; and islanders are not mainlanders. Most often on the periphery, islands from their earliest days were defined by their colonizing mainlands: colonial powers generally controlled the islands through political and economic means; and they wrote the history. But in recent years, as world power structures have changed, in order to resist exclusion and marginalization, territories (and I would thus argue islands) have undergone “an enormous act of what I want to call imaginary political re-identification, re-territorialization and re-identification... That is how and where the margins begin to speak. The margins begin to contest, the locals begin to come to representation (Hall 52–3).” Islanders have thus positioned themselves as distinct and set apart; indeed, Newfoundland’s first premier, Joey Smallwood, literally redrew the world map, placing Newfoundland dead centre.

Hay (2006) argues, with assistance from several islophiles writing about islandness, that
“those who stress the hard-edgedness of the shoreline also tend to emphasize the contribution such a heightened sense of physical containment makes to the construction of an island identity” (Hay 22).

The strong sense of island identity stemming from the sharpness of that wave-lined boundary is often said to consist in the community-defining bond of a shared sense of isolation that generates a “unique sense of difference to other populations” (Anderson 48). Isophiles tend to extol this sense of insularity; to see it as a source of islander resilience and versatility, and a state of existence to be cherished. (Hay 22)

But it is one thing to set oneself apart, making islandness exclusive in order to protect one’s place in the world; it is quite another to live as part of a global society, but with particularity — particular spaces, particular ethnicities — and, because of the small size and interrelatedness of islands, with resilience, openness, inclusivity, and fluidity. Hay goes on to explore this complexity, quoting Terrell (11): “Islands are more varied, diverse, and complicated places than commonly believed. . . . Isolation is not a defining characteristic of island life; to the contrary it could be argued that islanders are generally more aware of, and in touch with, the worldwide web of human intercourse than others may be” (Hay 22). Historically, too, islands change: “In the mix of the old and the new, island identities shift — they are endlessly remade, but enough remains constant for the island to persist” (Hay 24). Hay suggests — though wonders if it is not too simplistic a view — “the longer a community of people lives on an island, and the smaller the island, the stronger the sense of island identity, and of identification with the island” (25).

Where the island’s first settlers came from and when, and how its culture has evolved, are
partly a result of an island’s geography. In Iceland, the first settlers were the Norse and the Celts (Scots and Irish) who immigrated to Iceland as early as the 9th century. They were ruled by Norway, then Denmark, and gained independence in 1944. As today’s population make-up shows, there is little cultural diversity in Iceland: 94 per cent of the population are still Norse and Celt, while only 6 per cent are of foreign descent (CIA World Factbook). Extreme isolation has contributed to the Icelanders’ hegemony; there has been very little in-migration over the years. As a result, the gene pool is very narrow, and DNA testing shows that Icelanders’ DNA can be traced back to the early settlers with little mixing of outside genes. The cultural influences of the Norse and Celts are still strongly felt, in language (Icelandic is a Nordic language), legal systems (based on the Danish model), in social programs (modelled on a Scandinavian-type welfare system), customs, and traditions.

Prince Edward Islanders, on the other hand, can trace their ancestry to many sources: the indigenous Mi’kmaq; immigrants from Scotland, Ireland, England, and France in the early 18th century; and later immigrants from Lebanon, Holland, and various other countries in the 19th and 20th centuries (Backgrounder, 1999, p. 4). Prince Edward Island’s colonial masters shifted back and forth between the French and British until the Treaty of Paris confirmed the Island as one of Great Britain’s overseas territories. In 1769 St. John’s Island, as it was then known, was given its own governor and in 1851 responsible government, only becoming a province of Canada in 1873 when debt from building the railway threatened to bankrupt the colony. The strongest influence on PEI’s culture has come from the traditional colonial powers of England and France, with imported language (primarily English, with a small percentage of French), education, religion,
customs, and legal and government systems (based on the British models) maintaining strong
influences in PEI’s make-up. Being a province of Canada, and situated only 14 kilometres from
its closest mainland, has resulted in Prince Edward Island participating in Canadian culture by
necessity — though Prince Edward Islanders will always be Islanders first, Maritimers second,
and Canadians third. PEI’s history contributes to its distinct culture of being a place set apart
from the rest of Canada. Islanders romanticize their memories of being a separate jurisdiction;
they nourish the myths of the past, such as being staunch opponents to joining Confederation.
Simply put, most Islanders take pride in being islanded.

In comparing the cultural policies from the two islands, it is obvious that Iceland’s has
more “teeth” to it than does Prince Edward Island’s: its underlying principles are backed with
money as well as commitment; indeed, ISK 6.3 billion or 17.5 per cent of the Ministry’s total
funding, or 2.1 per cent of the national budget of ISK 296.4 billion (Government of Iceland 2005)
is earmarked for “cultural affairs.” Culture comes under the Ministry of Education, Science and
Culture, and is administered by the Cultural Affairs Office. With a population of approximately
299,000 people (CIA World Fact Book, July 2006 est.), a rough estimate of per capita spending
on culture is ISK 21,070 ($328.34 CAD) (Government of Iceland 2005).

In the context of this Survey it is used mainly to refer to cultural matters that are
administered by the Cultural Affairs Office and that do not fall in the categories of
scientific or educational matters. . . . This framework comfortably includes the arts
in the traditional sense of the term: music, the theatre, literature, the cinema, the
media, and activities directed towards the preservation and transmission of the
national cultural heritage. Sports and youth activities are also included in cultural
affairs. . . . [T]he state’s role consists mainly of creating suitable conditions for
work that is carried out by others and taking steps to promote the success of such
enterprises. (Iceland “Culture” 5)
The scope and commitment to the Icelandic government’s contribution to cultural policy is evidenced in the detail of their policy — and in its actual financial contributions. For instance, the Ministry pays artists’ salaries to writers, artists, and composers on the same scale as Lecturers’ Grade II at the University of Iceland. Intended to “stimulate artistic creativity in Iceland, and to provide a basis to enable the recipients to devote themselves entirely to their calling” (Iceland “Culture” 6), artist salaries in 2002 totaled ISK 246.9 million. The Ministry supports a large number of cultural organizations, such as the National Theatre, the National Gallery, the National Library, the Icelandic Symphony Orchestra, the North Iceland Symphony Orchestra, the Icelandic Dance Company, the Icelandic Opera, the National Einar Jonsson Museum, the Icelandic Film Fund, a state-owned National Broadcasting Service (which provides two radio stations and one television station “to the entire country and the fishing grounds adjacent to it all year round”) (Iceland “Culture” 20). And Icelanders support these organizations: they are generally seasoned concert-goers, attending classical concerts and the opera on a regular basis; even offshore fishermen are in the audience.

The Ministry supports a Public Buildings Art Fund, where 1 per cent of the total construction cost of each public building is devoted to decorating it and beautifying the surroundings, promoting artistic production and supporting local artists. Money is also made available to ensure that art is seen in already established public buildings.

Not only is culture supported in the largest city, Reykjavik, home to nearly 60 per cent of the country’s population (City of Reykjavik website), funds are also allocated to
municipalities throughout Iceland, to promote cultural activities in rural Iceland, paying for travel and transport costs throughout the country. At the same time, funds are also made available for both professional and amateur artists to take Icelandic culture to the rest of the world.

Iceland has a 99.9 per cent literacy rate (CIA World Fact Book), and is supported by a strong Public Libraries Act that states that all people shall have the opportunity of making use of the services of public libraries. Indeed, at the opening of the new National Library in the mid-1990s, over 1,000 people were in attendance.

Iceland’s language policy is devoted to the cultivation and protection of the Icelandic language and the enhancement of its position in all fields, including translation of foreign-language works into Icelandic (the entire works of Shakespeare and the Bible have been translated into Icelandic) and Icelandic works translated into other languages. There is even an official Icelandic Language Day.

Icelandic folk music has played a very strong role in Icelandic heritage, with church choirs predominant in even the most remote communities. Icelanders nourish a strong classical culture as well as an indigenous one, with world-renowned choirs and symphony orchestras playing on the best stages in the world. Many children attend music school as part of their day-to-day education, and they go on to train with masters around the world. Indeed, education is one of the reasons for Iceland maintaining such a strong culture. Literature, art, and music are integrated into the curriculum. Learning at least two other languages — English and Danish — is compulsory; and post-secondary education is free for all citizens.

Icelanders have a strong identity, deriving from a single dominant culture that has become
strengthened by isolation and a fierce independent spirit and faith in themselves that has become so out of necessity: without a “mother country” or “mainland” to fall back on, they know they can depend on only themselves. Yet they are a very pragmatic people: they know, too, that they must also be connected to the world in order to thrive.

Few things enhance international understanding or bring people of different nationalities closer together than a knowledge of each other's culture and customs. Currently there is a great upswing in tourism connected with cultural events, and Iceland’s embassies abroad put a lot of work into promoting the image of the country as the home of a nation with a unique culture and an interesting place to visit. (Iceland Foreign Affairs website)

At the same time, Icelanders are a cosmopolitan people; they are well-travelled, well-educated, multilingual, and often have postgraduate degrees from universities outside Iceland. The capital of Reykjavik is a thriving international city with all the latest cutting-edge fads and fashions from both Europe and North America in evidence. Icelanders’ appreciation for world culture is an example of their dual natures: as a nation set apart, they protect their language and culture; but as a confident nation fully engaged in the world, they are fluent in the international language of classical music and the arts. To be so is essential to their survival as a people.

In Prince Edward Island, the Culture, Heritage and Libraries Division is administered by the Department of Community and Cultural Affairs. In a previous administration, responsibility for culture came under Education, and in the one before that, Tourism, perhaps an indication of government’s lack of commitment to culture since governments of the day really did not know where culture fit. The Culture and Heritage divisions sponsor grant programs under the Acadian Cultural Development Programs, the Community Cultural Partnership Program, and the
Provincial Historica Heritage Fair, while Libraries maintain the Provincial Library system and the Public Archives and Records Office. Community and Cultural Affairs also administers Sport and Recreation.

PEI’s first Cultural Policy was passed by Cabinet in 2002, after several attempts over the years on the part of artists and arts organizations to get one in place. It begins with a quote from an earlier document prepared by the Ministerial Steering Committee on Culture in 1998 called *Culture — Itself a Treasure*, written by C. W. J. Eliot: “Culture needs no other rationale for support than the very deep societal need for its existence. Any society, any nation, any province aspires to a strong identity. That identity is built to a large extent on culture” (PEI Cultural Policy 2).

The Policy itself goes on to say that culture is not easily defined.

It is a sweeping concept that encompasses many fields of human endeavour. In its simplest terms, culture is the way of life of a people. When people think of their culture they often reflect upon values, beliefs, heritage, language and unique forms of creative expression. These are the elements that distinguish a given society. These aspects of our culture are evident in the artistic, cultural and heritage milieus; when these are vibrant and healthy, so, too, is our society.” (PEI Cultural Policy 2)

It states that the role of government is to facilitate the development and dissemination of culture. It is “intended as a framework of broad principles that guide the government’s decision-making and actions with respect to the arts, cultural industries and heritage” (PEI Cultural Policy, 2002, p. 2). This is followed by three pages of statements listing the government’s commitment to culture and its guiding principles. The language is very general in nature, with a promise to
work on developing goals and objectives for developing the arts, cultural industries, and heritage.

In the Public Accounts document for 2004, Community and Cultural Affairs’ budget for 2004 is shown totalling $24.7 million (Public Accounts 2004 12), 2.1 per cent of PEI’s total spending of $1.15 billion (Public Accounts 2004 6). Of the total Community and Cultural Affairs’ budget, those divisions that serve culture (including Culture and Heritage, Libraries, Recreation and Sport, and the PEI Museum and Heritage Foundation) received 33 per cent or $7,936,707 (Public Accounts 2004 43). With a population of 138,000, this amounts to $57.53 per capita. Funds are distributed directly to arts organizations and to artists through the arm’s-length PEI Council of the Arts’ and the five Regional Arts Councils’ grant programs. Total grants to artists amounted to $157,000 in 2004 (Community and Cultural Affairs Operating Grants).

In comparison with Iceland, 30 per cent of Prince Edward Island’s adults have a literacy rate that is classified as “very low”; about 30% of adults, compared with the national average of 25% (PEI Literacy Alliance). PEI struggles to maintain its one symphony orchestra, importing guest musicians to fill the ranks. PEI’s schools have a band program — one of the best in the country — and a strong tradition of county and provincial music festivals which offer a mix of musical genres, including some classical. PEI’s musical culture has its roots in Scottish and Acadian traditions, and the Island’s proximity to the North American continent result in exposure to mass popular culture musical influences. Arts education in the schools is sporadic; in the last few years an “ArtsSmart” program for visual art was instituted in some Island schools. From time to time, debates arise about arts and culture being a “frill,” especially when school boards are faced with problems of balancing their budgets. While math, science, language arts, and
social studies are considered the basis of the school curriculum, subjects such as art, music, and even physical education are often the first to be cut when school boards face lean budget years.

Prince Edward Island is an officially unilingual province — English — in an officially bilingual country — French and English. Indeed, a second language is not a requirement for high school graduation. Because our official languages are spoken so widely around the world, protecting our languages is not a rallying point for culture in Prince Edward Island. As it is in other provinces, programs are in place to encourage the protection and development of the French language in Prince Edward Island, primarily through the education system and its French Immersion programs. In Prince Edward Island, the Department of Community and Cultural Affairs’ commitment to supporting Acadian programs is ongoing, with French-language community centres receiving funding.

In comparison, Icelandic is spoken by such a small percentage of the world’s population that the Icelandic government commits significant resources to ensure its continued existence. In an increasingly globalizing world, language survival has become a touchstone for cultural survival. Just as a small island is more vulnerable to environmental disaster than a coastal area, since an island has boundaries — where the water begins, the land ends — and there is no hinterland of resources to draw upon, so too is a small island more vulnerable to losing its language and its culture. Islanders need to be aware of how culture can be affected by the forces of globalization and act accordingly if they do not want to become homogenous.

Eric Clark, in a paper presented at the Islands of the World VII conference in 2002, argues that just as the study of island biogeography has been key to the development of evolutionary
and ecological theories, so does the study of island human geography provide insights into the processes of globalization, and the concomitant decline in cultural diversity, most obviously manifested in the death of languages. Clark uses the decline of the Faeroese Ballad Dance as an example of how globalization has had an impact on a cultural tradition.

Globalisation involves the constant passing and erosion of borders. It is commonly assumed in the hype surrounding globalisation that the levelling of barriers in the progression toward a “borderless” world is an inherently positive development, associated as it is with a progressive expansion of solidarity and inclusion in the “us” of global society. This idyllic image of the globalised borderless world resonates poorly, however, in a world where we are presently losing, on average, two human languages every month. . . . The tendencies of globalisation to level borders and reduce insularity entails the paving of heterogeneity and the expansion of homogeneity, as the rate of extinction of natural species and cultural systems outstrips the rate of speciation and cultural differentiation. . . . If islands highlight boundaries and globalisation entails the crossing and displacement of boundaries, it seems boundary issues should take centre stage in any argument for the systematic use of island studies to better grasp globalisation. (Clarke 289–90)

Pete Hay of the University of Tasmania puts forth another view. The Mauritius Declaration of 1998 states that

islanders speak, and others hear, of the unique and positive cultural experiences of island living through literature and other forms of creative expression.

. . .

[I]t may be that it is only at the fringes that the necessary “critical distance” will be found that enables the envisioning and generation of real and radical alternatives to taken-for-granted existence. Despite the inflexibility to which islandness has conduced in the past, then, it may be that in the future islands will be crucial sites of inquiry, even of resistance. (Hay 80)

Pete Hay goes on to talk about how most islands have been shaped by European politics, so that much island art now has to do with the politics of identity, with “reclaiming territory.”
If island art embodies a psychological distinctiveness, if it is concerned with a politics of identity, and constructed in reaction to the particular stresses of a hard-edged, bounded existence, it follows that island art should be confrontational, abrasive, and often concerned with the negative aspects of existence. And it is the case that much island art configures identity as perpetually under threat of obliteration by robust and intrusive adjacent cultures. Much of it takes loss, dislocation, disconnectedness, isolation, stigmatisation, and marginalisation for its themes. . . . There is much scope in island art for ideological construction, for passionate engagement, for drawing links from the particular to the universal. . . . Island arts engage with the land and the sea (of course!) and the community. They address the large questions of existence, but they do it within a context of shore-bound particularity. They are, in reality, not “minor” artists at all, and island artists are, in reality, not workers at the margins. So should it be recognized. (Hay 80)

We see, then, that cultural policy can play an important role in the survival of a culture. Comparing per capita spending in the two islands (Iceland’s $328.34 CAD, versus Prince Edward Island’s $57.53) may not be entirely fair, given the fact that Iceland is a much wealthier, sovereign jurisdiction. However, the comparison serves to point out the importance Iceland places on culture: since Iceland is a sovereign state and has the most to lose, it invests significant resources in culture. And it is paying off. Icelanders are fiercely Icelandic; they are proud of their country. It shows in the vitality of their language, and their art is known and appreciated by audiences around the world. Their confidence as a people is enormous. Since Prince Edward Island is a sub-national jurisdiction, it can always fall back on the mainland. Iceland does not have that luxury. Prince Edward Islanders, although proud of their distinctiveness as a place set apart from mainland Canada, seem to be less strident; they seem to take their culture for granted. Icelanders know they are Icelanders.

The strategy of basing economic development strategy on culture and identity is a topic
for another paper. Henry Srebrnik writes:

It is the cultural values, attitudes, and habits of a people—their ethical codes and religious beliefs, their social structures and institutional arrangements—that are of overriding significance; these influence social behaviour and can impede or advance progress toward political and economic development. ‘If we learn anything from the history of economic development, it is that culture makes all the difference.’ (Landes in Srebrnik 64)

However, comparing cultural policies from two seemingly vastly different islands shows that a strong cultural policy is an essential component in recognizing that culture is at the heart of maintaining a strong cultural identity. And if that policy leads to a culture of confidence and empowerment, creating conditions for economic success, then so be it.

An example of a culture shifting from cultural disempowerment to confidence comes from the opposite side of the world to Iceland and Prince Edward Island. Epeli Hau`ofa of the University of the South Pacific in Fiji was born in Papua New Guinea, one of the countries the world recognizes as a MIRAB state (dependent on “Migration, Remittances, Aid and Bureaucracy”). As a teacher at the university, he recalls talking with his students about the country’s woeful economic state, and being swept up in the hopelessness and despair that things were never going to be any better. Later, while travelling on the islands of Hawai`i, a revelation struck him like a thunderbolt: his islands were *not* “islands in a far sea” as defined by the rest of the world, but rather a “sea of islands,” connected by the sea, and based on generations of tradition rather than a mere century of colonial mastery. He has since shifted the paradigm that shorelines keep island(er)s bounded: rather, he talks about how the ocean binds them together, and that the island must change its opinion of itself as a have-not culture to one that is rich in
tradition and worth fighting for. And that, he insists to islanders at home and around the world, is the first step in making a difference.

If we look at the myths, legends, oral traditions, and cosmologies of the peoples of Oceania, it becomes evident that they did not conceive of their world in such microscopic proportions. Their universe comprised not only land surfaces but also the surrounding ocean as far as they could traverse and exploit it, the underworld with its fire-controlling and earth-shaking denizens, and the heavens above with their hierarchies of powerful gods and named starts and constellations that people could count on to guide their way across the seas. Their world was anything but tiny. (Hau’ofa 30–1)

... Oceania is vast, Oceania is expanding, Oceania is hospitable and generous, Oceania is humanity rising from the depths of brine and regions of fire deeper still; Oceania is us. We are the sea, we are the ocean. We must wake up to this ancient truth and together use it to overturn all hegemonic views that aim ultimately to confine us again, physically and psychologically, in the tiny spaces that we have resisted accepting as our sole appointed places and from which we have recently liberated ourselves. We must not allow anyone to belittle us again and take away our freedom. (Hau’ofa 37)

Hau’ofa’s is an inspiring example of re-visioning through reclaiming his island’s history and myths, its traditions and heritage, its culture. Only by looking outward across the ocean while remaining firmly rooted in the land can islanders maintain a vibrant and dynamic culture that will serve as a basis for a strong island identity. Iceland appears to be balancing these well, as demonstrated in a cultural policy that has substance — and tangible results. Perhaps the time has come that Prince Edward Islanders should recognize what our older generations of cultivators knew, that the Island grows when the tide goes out.
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GENERATION BY GENERATION, COMMUNITY AFTER COMMUNITY

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Abstract

Building on the advances in environmental education over the past two decades, islands are now beginning to turn towards education for sustainable development. One of the evolving approaches focuses on school-aged youth and their communities, and incorporates the collection and critical evaluation of environmental information, drawing in the social, cultural and economic dimensions, and then applying the findings to solve local issues and problems through an action-orientated approach. Two ongoing programmes are discussed in this paper, one directed towards beaches in the Caribbean, Pacific and Indian Ocean islands, Sandwatch, and the second focusing on river systems in the Pacific islands, RiverCare. Suggestions are also proposed for a wider ecosystem approach, an Island-wide Environment Watch that would encompass a specific geographical area and involve a network of local partners.

Introduction

Change is an intrinsic part of life and education must reflect this despite the difficulties involved. Years ago, subjects were separated and clearly defined, for instance a subject such as geography was defined into a physical component concentrating on landforms and processes, and a human component focusing on patterns of human habitation and human activities. Nebulously joining the two was a regional component where students learnt about landforms and industries, climate and crops in different parts of the world. Now the subject is being encompassed by environmental studies and social studies and students and teachers have to grapple with trying to understand that soil erosion, for example, is not just a function of physical processes – rainfall intensity, slope angle, vegetation cover – but also a function of globalization as trade agreements make a particular crop uneconomic and land being left fallow.

Environmental education has seen many experimental methods in the last two decades. Approaches have included the dissemination of information based on the assumption that the receivers of the information have the knowledge to use it wisely. While other methods have focused on providing pre-determined solutions to solve immediate problems without providing space or time for the affected community to build their own capacity in the particular area. Perhaps the fact that so many different approaches to environmental education have been tried is part of the answer to the question: ‘Why after more than two decades of environmental education, are the same issues and problems still with us?’

People adapt to change slowly and there is often initial resistance. There are two main facets that must always be recognized in environmental education, whatever approach is adopted, firstly to recognize that environmental education is a long term activity – it is unlikely that worthwhile results will be achieved in a few months or the first year – rather persistence is the key. Secondly, environmental education is primarily about sharing knowledge and experiences and developing and enhancing skills in a multi-directional manner (not a one-way imparting of information from an educator to a receiver).

Education for Sustainable Development

At the end of the 1980s as countries began preparations for the Earth Summit in 1992, the concept of sustainable development began to evolve. The concept itself is an interesting one, but particularly difficult when it comes to implementation where it triggers many questions:
• How on an individual or global basis can we try to use the planet’s resources wisely, whilst leaving sufficient resources for the endless generations still to come and at the same time combat poverty?
• And especially how to achieve this against a background of such rapid technological change?
• And when do we know if we reach sustainable development? Or is it a target that keeps retreating the nearer one gets to it.

While trying to put some practical meaning into sustainable development within a small island context, a concept of sustainable island living is evolving, which attempts to personalise sustainable development, and may be defined as follows:

*a process that enables everybody to enjoy a decent living and a good quality of life in terms of satisfying their needs (economic, social, ecological and cultural) and creates an enabling environment for the next generation to fulfil its aspirations. Sustainable island living is based on core values such as a culture of partnership based on shared vision, good governance, people’s rights, autonomy of the community, and participatory approaches.*

Furthermore, in attempting to bring the concept to the personal level, it becomes apparent that every individual and community member has a role to play; and in focusing on the next generation as opposed to future generations, the concept becomes more immediate as a goal to be achieved in an individual’s lifetime (Cambers, 2006).

The decade 2005-2014 has been declared the United Nations Decade of Education for Sustainable Development. This decade is a far-reaching and complex undertaking having at its centre the concept of empowering people of all ages to assume responsibility for creating and enjoying a sustainable future. Whilst far-reaching in conceptualisation with the potential to touch everyone’s lives, it must be acknowledged that in order for it to have any meaningful impact, it will have to be localized and translated into practical terms.

This paper describes two tools that have been developed and tested, in small islands around the world and that show potential for bringing Education for Sustainable Development to the local level such that children, youth and communities can learn together to address issues in a manner that contributes to the creation of sustainable island lifestyles.

**Sandwatch**

Sandwatch provides the framework for school students, with the help of their teachers and local communities, to work together to critically evaluate the problems and conflicts facing their beach environments and to develop sustainable approaches to address these issues. With a strong field monitoring component, Sandwatch tries to ‘make science live’, yet remains inter-disciplinary with applications ranging from biology to woodwork and from poetry to mathematics. Sandwatch is about getting the students outside and away from the more formalized classroom surroundings helping them gain first-hand experience of their community, their natural environment and the issues facing both. In so doing, they benefit from a more ‘hands-on’, practical or discovery learning approach.

Sandwatch is supported by the United Nations Educational, Scientific and Cultural Organization’s (UNESCO) Education sector (the Associated Schools Project Network and the Education for Sustainable Development Section), Science sector (Environment and Development in Coastal Regions and Small Islands), UNESCO’s field offices; Live and Learn Environmental Education Inc. and other partners around the world.

Sandwatch started in the Caribbean when a group of teachers and students met in Tobago in July 1998 for an Environmental Education workshop and saw firsthand many of the problems
facing the coastal zone – problems related to erosion, pollution and development – and resolved to do something about these issues themselves. This was the beginning of what has become known as Sandwatch.

The approach was initially conceptualized as having two distinct phases: firstly there is the scientific monitoring of all aspects of the beach environment, ranging from wave energy to erosion, and from garbage surveys to the numbers of plants and animals. Monitoring here includes collection of the data, analysis of the results, and critical assessment of the identified issues. The second phase consists of moving from identification of the issues to a determination of what the group can do to address one or more of the issues. So put simply the process is positive environmental action based on sound science.

A regional approach was adopted whereby a training manual was prepared (and is available on the web) and teachers from fifteen Caribbean countries were invited to a training workshop in St. Lucia in 2001. Each country was provided with several equipment sets; only very basic equipment is needed in Sandwatch, e.g. items such as tape measures, hand-held magnifying glasses and simple water quality kits (Cambers & Ghina, 2005). Two years later, students and teachers came together in Dominica to share experiences, successes and lessons learnt. Educators from small islands outside of the Caribbean: Palau, Cook Islands and Seychelles were also invited.

### Sandwatch Activities in St. Vincent and the Grenadines: Bequia Community High School

- Integrating Sandwatch across the curriculum from woodwork to chemistry, and from poetry to mathematics, with the help of all the school’s teachers
- Bringing the real world into the classroom learning environment so that students develop critical thinking skills and learn how to resolve environment/development conflicts in their own homes and neighbourhoods
- Terracing and planting a hill slope at Park Bay to reduce the impact of sediment-laden runoff impacting a nearby reef
- Monitoring changes in beaches and reefs around the island so as to design and implement wise practices to cope with beach erosion and reef degradation
- Monitoring development activities e.g. measuring key environmental parameters before and after the filming of a Disney movie
- Reaching out to other schools and communities in their country and region to share their knowledge and experiences and to help other groups get started in similar activities
- Producing their own newsletter: [Sandwatch Newswatch](#)
It quickly became clear that schools and islands were at very different stages, some were just starting monitoring, while others had undertaken extensive and detailed beach monitoring activities (e.g. St. Vincent and the Grenadines – see box). In evaluation sessions at the Dominica workshop, teachers recognized the value of Sandwatch, but felt that they had received insufficient support from either UNESCO or their national departments of education.

In 2004 - 2005, a Community Sandwatch Competition was organized to initiate and provide an incentive for schools to embark on the second phase of Sandwatch, namely to plan, design, implement and evaluate a community-based beach enhancement project using the scientific beach monitoring methods that are an integral part of the Sandwatch project. There were 30 entries from nine different island territories in the Caribbean and Pacific regions; entries came from primary and secondary schools.

The standard of entries was very high. One member of the jury panel summed up the entries as follows: ‘The entries were inspiring and illustrate . . . ways in which Sandwatch has become integrated across school curricula. They provide many different examples of education for sustainable development in action, ranging from a Cuban school which focused on enhancing the understanding of construction workers at a beachfront hotel about caring for the beach environment, to a school in St. Vincent and the Grenadines which restored a degraded coastal area and ensured the local community adopt their project, thereby providing for continuation after the competition. Schools in The Bahamas and Cook Islands demonstrated perseverance and ingenuity when their beaches were destroyed by hurricanes/cyclones. Sandwatch is an activity in which students with special needs, such as autism, can get involved, as shown by a Cuban entry.’

The schools spent the best part of a year preparing their entries for the competition, and the entries themselves illustrated a wholehearted commitment to the process, as illustrated by the following quotation from the entry provided by the Coleridge and Parry School, Barbados: ‘We are not about winning; we just want to highlight what we have been doing over the past few months. The idea is to get the whole island on Sandwatch.’

Following the competition, and as Sandwatch expands to other islands, it has been decided to work with schools and countries on a one-to-one basis, depending on their individual needs and goals. To this end the training manual was revised and published in 2005.

In 2006, with the help of an Information Technology teacher from the British Virgin Islands, an interactive Sandwatch website has been established. This includes country pages where schools can submit photos, data graphs and descriptions of their own activities. There is also a forum where teachers can discuss issues and ideas (www.sandwatch.org).

One of the original goals of Sandwatch was to see the programme incorporated into the school curriculum, yet this goal has proved elusive. Only in one island country, Cook Islands, is this being achieved. Here the Curriculum Advisory Unit is adapting Sandwatch activities to support their own curriculum. They have translated some of the material into Cook Islands Maori and have conducted training workshops for all the schools. Now teachers are incorporating the activities into their own lesson plans. A national Sandwatch Conference is among their future plans where students from all the islands in the Cook Islands can meet to exhibit and discuss their activities.
Sandwatch Activities in Cook Islands

- After participating in a Sandwatch Workshop in 2003, a teacher from Rarotonga shared the approach with the Curriculum Advisory Unit, who were undertaking a review of the science curriculum.
- Recognizing the potential of Sandwatch, especially in the small island context, the Curriculum Advisory Unit adapted the Sandwatch material to support their own units and translated some of the material into Cook Island Maori.
- Workshops were conducted with teachers in each school to share the Sandwatch methods.
- Now teachers are including Sandwatch in teaching units focusing on landscapes, recycling, tourism and ecosystems.
- In 2005 Nikao Maori Primary School in Rarotonga won first prize in the UNESCO Community Sandwatch Competition – Primary School Section.
- Future plans include a national Sandwatch Conference for students from throughout the Cook Islands.

In the Maldives in the Indian Ocean, yet another approach to Sandwatch is being tested. Here there are about 1190 islands organised in 25 atolls. Two hundred of these small islands are inhabited, and there is no point higher than 3m. In many of the islands beach erosion is a serious problem, which has been exacerbated following the 2004 Indian Ocean tsunami. In 2006 Live and Learn Environmental Education began a community-based project focusing on sound environmental management with the support of the Asian Development Bank and the Ministry of Environment, Energy and Water, Republic of the Maldives. Focusing on five islands, they undertook a rapid assessment of community perceptions, and found that the main problems identified were water, waste management and beach erosion.

Regarding the beach erosion issue, a toolkit is being developed and tested, utilising some of the Sandwatch methods, which empower communities to monitor and understand the changes taking place in their islands’ beaches, and ultimately to take appropriate action.

While obviously it is still too early to comment on whether the approach will be successful, it will be interesting, within the concept of education for sustainable development, to observe how communities adapt the Sandwatch idea of ‘positive environmental action based on sound science’ to their own needs.
Community Sandwatch in the Maldives

- Many islands in the Maldives are experiencing serious beach erosion
- Communities in Thaa Guraidhoo and Laamu Kalaidhoo are utilising the Sandwatch approach to monitor the changes in the beach so as to better understand the causes of the erosion and to discuss their findings with their Island Committees
- Ultimately it is hoped that measures can be taken to effectively manage the problems of erosion in these communities

RiverCare

RiverCare was started by Live and Learn Environmental Education as a pilot project activity in Fiji in 2002 and was developed in response to growing pollution problems in Fiji and the South Pacific. The programme is supported by New Zealand AID and other organizations, and it seeks to empower people with the understanding that we can all be involved with caring for our rivers; we want to be able to drink from them, fish from them and pass them onto our children as previous generations have passed them onto us.

Against a background of increasing demand for available water resources, and rapidly growing populations and urbanization, degradation of water quality is becoming a major problem.

RiverCare recognizes that pollution is everyone’s responsibility; the vision is to empower people and provide them with the understanding and skills necessary to make a difference. The programme fills a unique niche in strengthening the capacity of teachers to create changes to improve or prevent degradation of the natural environment. Teachers in the South Pacific are respected members of the local community and they are close to elders, chiefs and decision-makers. They are considered to be educated and are therefore listened to. This presents immense opportunities for sound management of natural resources and reduction/prevention of poverty.
One of the most important components of the RiverCare programme is local ownership. The programme facilitates a learning process where students and young people are given the opportunity to identify (through water testing), investigate and solve environmental river problems. Teachers are trained in using water quality test kits which are provided to schools. The results are investigated and analyzed by the students and then presented to the community as a whole, which fits perfectly into the science component of the curriculum. By collecting real and useful data on chemical, physical and biological processes, students gain skills in scientific monitoring and develop awareness. By acting on these results, students gain social-action skills and they become a part of the decision-making process.

Targeting older students between 16 and 18 years, and in close cooperation with the Ministry of Education in Fiji, RiverCare has been successfully introduced in more than 80 schools in Fiji, and is now expanding to other islands of the South Pacific including the Solomon Islands. Students are taught to look at the entire catchment, to map the habitat and physical features of one section of the river, and then to conduct water quality measurements using simple test kits. Then, like in Sandwatch, they analyse their data, identify the issues and develop and implement an action plan together with the community to address the issues.

A manual, lesson plans and posters have been developed and are available on the web. With the assistance of Vodaphone, a three-year programme is at present underway in Fiji to further consolidate the RiverCare programme in selected schools and communities.

**RiverCare Activities**  
**All Saints Secondary School, Fiji**

- The All Saints Secondary School is directly impacted by the badly polluted Qawa River
- Following a teacher training workshop in June 2003 a River Care group was formed at the school
- The group monitored water quality along a 0.5 km stretch of the Qawa River every week
- An environmental awareness workshop to sensitise everyone in the area was held
- A partnership was formed with the Labasa Mill who assisted them with their monitoring
- Other partnerships have been formed with the Labasa Town Council and the University of the South Pacific to continue monitoring the river and address the issues together

*Monitoring water quality in Fiji*

Photo credit: Live and Learn Environmental Education Inc.
Discussion

One extremely interesting aspect of these activities is their similarity in approach, while dealing with different components of the island ecosystem. Both programmes targeted secondary school students as an entry point and focused on simple scientific monitoring activities that would provide the basis for identifying issues and then sharing the findings with the local community and taking action. The fact that the programmes developed independently in small islands in different regions is also a point of interest.

However the Sandwatch/RiverCare approach is not just restricted to secondary schools students. As has been seen with Sandwatch, the approach has perhaps even more scope at the primary school level where students are less confined by a very tight examination schedule.

One of the main advantages of the Sandwatch/RiverCare approach is its flexibility. As can be seen in the Cook Islands, the Curriculum Development Unit is helping teachers adapt specific components of Sandwatch to support and enhance specific teaching units.

Going another step forward, then it quickly becomes apparent that the Sandwatch/RiverCare approach can be adapted to a community focus, as is presently being tested in the Maldives with Sandwatch and in Fiji with RiverCare. The approach with communities has to be slightly adapted so that communities use participatory methods to first of all identify the issue or issues and then conduct some simple monitoring to learn more about the particular issue before taking action. So the action is always based on sound science.

The approach has scope for adaptation to other ecosystems – hill slopes, mangroves and wetlands, seagrass beds, and coral reefs.

Notwithstanding the above, Sandwatch and River Care are just two environmental education initiatives among many others that have been implemented over the past two decades, and yet in small islands and larger countries around the world, we still see environmental degradation all around us from the ubiquitous plastic bags to the deforestation of hill slopes. So we must return to the question raised at the beginning of this paper: Why after more than two decades of environmental education, are the same issues and problems still with us?’

Certainly there are no easy answers to this question. Much of the past efforts have focused on youth. In many ways they represent a ‘captive’ audience, at least in the school setting, and they have the energy and enthusiasm to try and change the world. The hope has always been that they would involve their parents and families and thus in this way the new information and environmental friendly methods would reach a larger audience. But is this really happening? Or is there some strange metamorphosis that takes place, as youth mature into young adults, and forget all their environmental ideals and eco-friendly practices? Perhaps this age group, the young adults in their twenties, is where efforts should be targeted. (Although of course in many islands, youth includes persons up to age 35-years).

Perhaps too, our efforts have been spread too thinly in the past, with many different organizations and groups working on environmental education, but with little interaction or combination of effort. One suggestion for the future is to focus environmental education efforts in a distinct geographic area. Taking for example a district, a parish or a watershed, different groups would undertake to monitor specific aspects of environmental change, for example, weather observations, land clearing and sediment runoff, river pollution, mangrove health, beach littering. Each group could work individually, collecting information about the changes over time, identifying issues, and undertaking activities to address the issues; but there would also be opportunities for the groups to interact with each other to discuss and exchange experiences and possibly also to collaborate with each others activities. This could be a school-based or community-based approach.  The methods adopted for monitoring environmental changes must be simple, low cost (or no-cost) and sustainable. For this is not an academic programme, rather it is a case of helping ordinary
people help themselves by collecting the necessary information and using it to enhance their neighbourhoods and to make their own individual lives, and those of their children, better. (Such methods already exist for most, if not all, the ecosystem components).

The hope is that by concentrating efforts in one area, significant change will become apparent, not just to those living in the area, but to others living in the island, who will then want to see similar improvements in their areas.

With different activities, linked and focused in a specific geographical area, the potential exists for significant impact that is likely to amount to more than the sum of the individual components.

Let's begin an ISLAND ENVIRONMENT WATCH.

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Island Vulnerability and Sustainable Development – Taiwan Experience

Chang-Yi Chang & Kuan-Hui Lin
Department of Geography, National Taiwan University

International Small Island Studies Association
July 28 - August 5, 2006
Kahului, Maui, Hawaii
Introduction

- This is a case study at the place scale to reflect the coupled social-ecological systems as driving forces to change land use/cover in a vulnerable area. Precisely articulate the relationships between hazards and environmental transition process in the context of social-economic dynamics that shape the vulnerability.
Objectives

- To investigate the land use/cover change process after 1999 Chi-Chi earthquake
- To analyze the vulnerability in the process of environmental change
- To identify the most vulnerable people
Methodology

- Conceptual framework for vulnerability analysis: Coupled human-environment system
  - Operational concepts
    - Exposure: settlement location, population
    - Sensitivity: livelihoods, assets (population structure, income, land size)
    - Adaptation/resilience: entitlements (policy), social capital
Land use and land cover change
  - Satellite images (SPOT and Formosat) to identify landslides areas after chichi earthquake (data source: The Soil and Water Conservation Bureau)
  - GIS

Data source:
  - Government statistic data
    - Department of Statistics, Ministry of The Interior
    - Heping Household Administration, Taichung County
    - The Soil and Water Conservation Bureau
    - Central Weather Bureau
  - Interviews with the local people for qualitative analysis
Hazards in Taiwan: The Multiple Stresses

- On the Circum-Pacific Seismic Zone
- In the edge of Asia continent
- Multiple natural hazards, the greatest threats are earthquakes and typhoons.
● From 1900 to 2005, there are 93 hazardous earthquakes with magnitude 5 or more on Richer Scale.
### Historical Impacts and damages of hazardous earthquakes (1900-2005)

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<td>3,276</td>
<td>17,907</td>
<td>Taichung County</td>
</tr>
<tr>
<td>1941</td>
<td>12</td>
<td>7.1</td>
<td>358</td>
<td>4520</td>
<td>Chiayi County</td>
</tr>
<tr>
<td>1946</td>
<td>5</td>
<td>6.1</td>
<td>74</td>
<td>1954</td>
<td>Tainan County</td>
</tr>
<tr>
<td>1959</td>
<td>20</td>
<td>7.1</td>
<td>16</td>
<td>1214</td>
<td>Pinton County</td>
</tr>
<tr>
<td>1964</td>
<td>18</td>
<td>6.3</td>
<td>106</td>
<td>10,924</td>
<td>Tainan County</td>
</tr>
<tr>
<td>1986</td>
<td>15</td>
<td>6.8</td>
<td>13</td>
<td>37</td>
<td>Hualien County</td>
</tr>
<tr>
<td>1999</td>
<td>8</td>
<td>7.3</td>
<td>2,413</td>
<td>&gt;8,000</td>
<td>Nantou and Taichung County</td>
</tr>
</tbody>
</table>
1999 Chi-Chi Earthquake

- Chi-Chi earthquake was a result of a major reverse fault, the Chelungpu Fault, hit just 7-10km below the earth’s surface in Central Taiwan.

- Length of uplifted fault: 100 km
- Vertical displacement: up to 2m
The severity and frequency of typhoons have been strengthened in the past few years.
Number of Typhoons per year: 1980 to 2005

![Graph showing the number of typhoons per year from 1980 to 2005. The graph indicates a trend with peaks in 1999, 2003, and 2005, and a low in 1991.](image-url)
The earthquake made over 40,000 landslides in mountainous areas.

With the coupled effects of intensive typhoons, land cover of Taiwan mountain areas have been changed, and exposed local people to a greater hazard risks such as debris flows and floods.
Songhe Village is located in Hoping Township, Taichung County.

- **700m** above mean sea level

- **Average precipitation** is 2267.1mm per year and mainly focusing from May to September.

- **Population**: about 1,000 in total

- **Landslides** that induced by 1999 Chi-Chi earthquake and typhoons are accounted for 44 areas, 36.86 hectares. Landslide ratio in Songhe is 10.24%.
Three important hazards:

<table>
<thead>
<tr>
<th>Physical Hazards</th>
<th>Time</th>
<th>Scale</th>
<th>Local Damage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-Chi earthquake</td>
<td>21 September, 1999</td>
<td>7.3 Richter scale</td>
<td>Landslides: 44, Houses totally destroyed: 162, Houses half destroyed: 218, Nobody dead</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aere Typhoon</td>
<td>24 August, 2004</td>
<td>Maximum Wind Speed 38.0 m/s</td>
<td>Dachia River floods, Houses destroyed: 40 (mainly affected by Dachia river floods), Death: 4 people dead</td>
</tr>
<tr>
<td>Mindulle Typhoon</td>
<td>2 July, 2004</td>
<td>Maximum Wind Speed 45.0 m/s</td>
<td>Debris flows: 2, Houses destroyed: 38 (mainly affected by debris flows), Death: 4 people dead</td>
</tr>
</tbody>
</table>
Socio-Economic Context

<table>
<thead>
<tr>
<th>Stage</th>
<th>Land Use</th>
<th>Land Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before 1895</td>
<td>hunting and self-sufficiency agricultural cultivation</td>
<td>Indigenous (Taiyal)</td>
</tr>
<tr>
<td>1895 Japanese colonization</td>
<td>large-scale of deforestation</td>
<td>Taiyal, Fukeinese, Hakka</td>
</tr>
<tr>
<td>1945 R.O.C government</td>
<td>large-scale of deforestation, market-oriented agriculture production</td>
<td>Taiyal, Fukeinese, Hakka, Mainlanders</td>
</tr>
</tbody>
</table>

- Human-Environment transition: From colonialist deforestation to capitalist deforestation and capitalist economic-agriculture production

- Sub-groups: different narratives Taiyal/ Fukeinese /Hakka/Mainlanders

  Settlement locations
  Livelihoods
  Environmental knowledge/perception
  Institutional custom
  Culture context
<table>
<thead>
<tr>
<th></th>
<th>Taiyal</th>
<th>Fukeinese, Hakka</th>
<th>Mainlanders</th>
</tr>
</thead>
<tbody>
<tr>
<td>SL</td>
<td>On mountainsides away from landslides areas</td>
<td>Along Dachia river and closer to landslides areas</td>
<td>On mountainsides closer to landslides areas</td>
</tr>
<tr>
<td>P</td>
<td>About 400</td>
<td>About 400</td>
<td>About 200</td>
</tr>
<tr>
<td>L</td>
<td>Family hotel, ecotourism, part-time jobs</td>
<td>Small capital business, Market-oriented agriculture, Timbering</td>
<td>Market-oriented agriculture, Timbering</td>
</tr>
<tr>
<td>EK</td>
<td>Better environment knowledge</td>
<td>Insufficient environment knowledge</td>
<td>Insufficient environment knowledge</td>
</tr>
<tr>
<td>A</td>
<td>Low income</td>
<td>Higher income</td>
<td>Higher income</td>
</tr>
<tr>
<td>E</td>
<td>Higher entitlement and empowerment to policy</td>
<td>Low entitlement and empowerment to policy</td>
<td>Lower entitlement and empowerment to policy</td>
</tr>
</tbody>
</table>

SL: settlement locations  
P: population  
L: livelihoods  
EK: environment knowledge  
A: assets  
E: entitlement, empowerment

Different Vulnerability

<table>
<thead>
<tr>
<th>Exposure</th>
<th>Sensitivity, Resilience/Adaptation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taiyal:</td>
<td></td>
</tr>
<tr>
<td>Fukeinese, Hakka:</td>
<td></td>
</tr>
<tr>
<td>Mainlanders:</td>
<td></td>
</tr>
</tbody>
</table>
Conclusions:

- Vulnerability has evolved in the coupled human-environment systems. And with the increase of multiple stresses, vulnerability has become differentiated socially and geographically. In Songhe village:

  - Social process, geological movement and global climate change expose people to new and greater risks.
  - People migration into environmental sensitive areas, thus a greater exposure to hazards.
  - Socio-cultural context of the people play a significant role that determine the impacts of hazards. The Taiyal is less vulnerable than Fukeinese, Hakka, Mainlanders. Fukeinese and Hakka have the highest vulnerability.
Conclusions:

- Hazard is not the necessary and inevitable consequence of a single cause, such as typhoons or earthquakes, but instead the contingent and often avoidable result of multiple causes, such as the co-occurrence of political economy with the environmental stresses.

- The impacts of hazards are not evenly distributed in a space unit, because of the complexity and diversity of the social context. The corresponding policy and long term vulnerability-reducing strategies should be based on the small scale and linked by necessary to regional or national scales for understanding and plans.
Thank you for your attention!
The coconut crab *Birgus latro* (L.) conservation network at Green Island in Taiwan

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Abstract

The coconut crab has been a globally protected species on the *Red list* since 1983, and was placed on the protected list in Taiwan in 1995. Its population has declined rapidly on Green Island, a tiny island located off the southeastern coast of Taiwan. Since the home range of coconut crabs extends from coastal to mountain of the whole islands, a health coconut crab population will indicate the good environment of the island. In order to conserve it, an integrative approach was carried on, including artificial larvae cultivation, estimation of population size, juvenile habitat survey, genetic markers and community environmental education. Some actions such as ecopassway, ecomuseum, ecotourism and marine protective area are undergoing. We initiated a conservation team composed of local residents and officials to plan and execute restoration action. Moreover, environmental education was carried out on local teachers, students, and residents. Participation of local communities is the key to restore sustainably the population of coconut crabs in Green Island. We are holding several meetings and workshops to involve various stakeholders, ranging from various levels of government to local residents, to develop a comprehensive strategy to ensure the right direction and effective management for the MPA, as well as devising training courses for local environmental education in the hope that we can change the role of residents from hunters to protectors. These whole set of network will be extending to Indo-Pacific Ocean states through a website, which is being built now. Only by continuously raising public awareness about protecting natural resources through environmental education and implementing community-based management can the goals be sustained.

Keywords: Coconut crab, conservation network, Green Island
Introduction

The coconut crab *Birgus latro* (L.), the monospecific genus *Birgus* within the family Coenobitidae, and probably the largest terrestrial arthropod in the world, is found throughout many of the islands of the Indo-Pacific, including, the Green Island in Taiwan (Fig. 1). It is a typical hermit crab but without carrying gastropod shell throughout the initial stages of its life. Females release their larvae into the sea in the new moon phase, and the larvae live with the planktonic community for about a month. Then as postlarvae, or glaucothoes, settle to the bottom, and carry a small snail shell, and then emerge onto the shoreline as a part of hermit crab communities (Reese, 1968). When they reach a size of roughly 1 cm across the carapace, coconut crabs give up the shell-carrying habit of their hermit crab ancestors (Fig. 2).

Green Island (Lutao) is a small volcanic island located off the southeastern coast of Taiwan (Fig. 3). It covers only 16.2 km$^2$, with a population of only 3201 people in 2003. Its climate is warm, wet, and windy, with an average annual temperature of about 23 °C. The plenty ecological resources of Green Island are well preserved due to its unique historical development. Two thousand years ago, aboriginal BeaNam people lived on the island. A mere 200 years ago, Han (Chinese) people began arriving. The basic economy of the island has traditionally been fishing and the raising of deer, but the recent development of tourism has involved many people in this industry (History of Green Island, available at [http://www.ttcsec.gov.tw/website/ce31/pic_m.htm](http://www.ttcsec.gov.tw/website/ce31/pic_m.htm)). The most important resource of Green Island is the high biodiversity of the surrounding seas. There are records of 176 species of hard corals, 27 species of soft corals, and 602 species of fishes (Chang et al., 1983, 1991; Jeng, 2002), as well as numerous seaweeds, sponges, shells, shrimp, crabs, sea urchins, starfish, etc.
Tourism development is now viewed as an important aspect of economic activities for enhancing local economies, especially on this island where tourism is rapidly developing; it can provide new employment and revenues and additional tax receipts to local communities, enhance community infrastructure, etc. (Ko et. al., 2002). The development of tourism on Green Island in recent decades has brought many tourists onto this small island, resulting not only in large economic benefits locally, but also in enormous pressures on both the coastal ecology and local society.

On Green Island, coconut crabs have a close relationship with residents. Since their ancestors immigrated from Liuchiu to Green Island 200 or so years ago, the local Han Chinese have used the crab as a source of animal protein for their families, and additionally, children play with the coconut crabs as pets.

However, due to tourism and other activities, environmental pressures have widely impacted the ecological systems of Green Island. For instance, carcasses of coconut crabs and other crabs litter the roads because of passing cars and motorcycles driven by tourists. Up to 2000 tourists visit Green Island per day in the summer season, while the only road circling Green Island is a mere 20 km long. These coastal roads cross the migration pathways of many organisms, and crabs are threatened since most crabs migrate landward from the sea during the mature stage, and then return to the sea during the spawning period. In addition, there are poachers who hunt the crabs illegally. Therefore, the populations of crabs on Green Island are declining at an unprecedented rate.

The coconut crab, is the species most seriously threatened by tourism development. Not only do roads cross their migration routes, but environmental deterioration has also damaged their habitats, e.g., the cutting or burning coastal forests. Moreover, coconut
crabs are considered sea delicacies by local residents. As a result, the population of coconut crabs has dropped so low that only experienced local residents can now find them. It has been on the Red list of the International Union for the Conservation of Nature since 1983 (Wells et al., 1983), and is the only protected crustacean species designated by the Wildlife Conservation Law in Taiwan since 1995.

Our proposition of using the coconut crab as a target species of conservation efforts is based on its (1) special large body size, (2) special niche, (3) long life history, and (4) the unique life of this migrating species, as adults occur in terrestrial mountain areas. Successfully conserving the habitat of coconut crabs will not only protect the coastal zones and nearby waters, but also land areas. It is an umbrella species of Green Island, and the best indicator for monitoring the quality of this island's ecosystems. In order to restore and manage the vitality of this threatened species, we have integrated and implemented comprehensive lines of works, including artificial larvae cultivation, estimation of population size, juvenile habitat survey, genetic markers and community environmental education. Some actions such as ecopassway, ecomuseum, ecotourism and marine protective area are undergoing.

**Actions for coconut crab conservation**

1. Larval culture of coconut crabs

   In order to restore the coconut crab population at Green Island, we reared larvae of *B. latro* in the laboratory to the zoeal stage. Crabs generally spawn in the dusk at high tide coinciding with a dark phase of the moon in summer. Female crabs carrying dark-brown mature eggs were collected when they walked down to the edge of the sea to wash their eggs. The mature eggs immediately hatch to 1st zoeae when eggs contact the seawater.
Zoeae were kept in filtered seawater at a temperature 24-25 °C and a salinity of 34‰~35‰. In general, larvae have five zoeal stages which last 29 to 31 days (Reese, 1968), but in 2003, of a total of 13 glaucothoes which were reared from 300 zoeae, among them about 50% of those glaucothoes emerged from larvae which shortened their zoeal stages from 3rd zoeae to glaucothoes on the 25th–28th days. Morphologically, the thoracic appendages of those skip-developed individuals at the 3rd zoeal stage looked like those of 5th zoeae, but the telson was armed with 8 + 1 + 8 processes similar to those which molted to 4th zoeae. Those skip-developed individuals had a significant shorter larval duration than those which emerged from 5th zoeae. Since the coconut crab has shorter larval stages among the Coenobitidae, comprising land hermit crabs, we suspect that this skipped development has positive adaptive significance for terrestrial living. Some glaucothoes began amphibious life on the 32th day of life in the laboratory. They swam by using the pleopods, crawled along the bottom, and emigrated from the sea water to the land. In 2003, all glaucothoes did not carry a gastropod shell and died soon (Chen & Wang, 2004).

The results of studying in 2004 showed that when fed *Artemia* nauplii enriched with polyunsaturated fatty acids, (n-3) HUFAs, EPA, DHA, etc., the survivorship of zoeae significantly increased. In total, 20 glaucothoes emerged from 5th zoeae (no skipped situation was detected), and 6 glaucothoes carried the gastropod shell in their amphibious life (Fig. 4). These preliminary but promising results indicate that the artificial seeding of juveniles is workable. So a technique of mass culture of juveniles is now being developed.

2. Estimation of population size

The basic survey of coconut crab population was carried out by the method of ‘mark-recapture’ from July to October in 2005. Two local people who were familiar
with the ecology of coconut crab, searched coconut crab at nightfall by slowing driven
car along circling road with the distance about 17km. When individuals were found,
they were captured and marked the number at their thoracic carapace (Fig. 5). After
recording captured time, site, sex, reproductive condition and the values of
cephalothoracic length, weight, the individuals were released. There were 10 male crabs
and 13 female crabs captured during our survey, and estimated the population number at
82 individuals. The size of crab ranged from 21.86 to 43.66 mm. When compared with
the result of preliminary survey in 2003 and 2004 with the size from 19.05 to 53.06 mm,
the crab size was smaller than the results before 2005 (t-test, p<0.05). Moreover,
according to the results of population survey from an inhabited island, Taiaro atoll
(Tuamotu archipelago, French Polynesia), there were 14,825 male crabs and 22,175
female crabs found (Chauvet, 1999). The small number and size of coconut crab in
Green Island may affect the recruitment of population and reflects the importance of
imperative conservation works for coconut crab.
3. Investigation of Juvenile Habitat

We investigated the distribution of juvenile coconut crabs in Green Island in 2003
and 2004. Four juvenile coconut crabs without carrying shell were found in coastal
shrubs and farmland which were away from shoreline 500m after sampling 6 sites
where a total of 52 adults were encountered in 2 years (Fig. 6). The cephalothoracic
length of juvenile crabs were about 19~23 mm. The results of low recruitments
reinforced the necessity of replenishing natural population by artificial cultivation and
preserving habitat diversity.
4. Conservation genetics of coconut crab: Genetic connectivity to the Pacific Islands
and marine protected area network

_Birgus latro_ is widely-distributed on isolated tropical islands throughout the
Indo-Pacific. However, being a favor food source and loss of habitat, coconut crab in these islands also facing the same depletion or extinction as their counterparts in Green Island. The coconut crab is completely terrestrial except for a marine planktonic larval phase of 3-4 weeks. Up to date known genetic evidences by allozymes and mt DNA polymorphisms indicated that Pacific island populations diverge in a manner consistent with isolation by distances with only the peripheral population being significantly different (Lavery et al, 1995 & 1996).

Being one of the peripheral populations, Green Island, sitting in the midway of the Kuroshio Current, should have the gene flow from the populations of upstream islands such as Lanyu along the current and show genetic differentiation from distant islands such as Fiji or Cook Island from the equatorial currents. It is also suggested to play a stepping-stone role in the genetic connectivity to the Pacific islands such as Lanyu and Ryukyus.

In this research issue, conservation genetics of *Birgus latro* is proposed. By developing hypervariable microsatellite marker, genetic connectivity of *B. latro* will be examined by nested hierarchical design from different geographic scales. The outcomes of genetic structure, gene flow and recruitment patterns will be utilized to answer the questions of long distance dispersal or self-seeding of coconut crabs, and provide the recommendation for the marine protected area design in Green Island.

In the first stage, we collected muscle tissues of legs for DNA work from Green Island and two sites of Camotes and Bongao Island in Philippines. The sample sizes are 13, 25 and 32 respectively with approximately equal ratio of male to female. After the microsatellite library constructed, we optimized PCR condition and screened against DNA samples of 13 individuals collected from Green Island to characterize the developed microsatellite (Fig. 7). Twelve of thirteen primer sets successfully amplified
with expected allelic sizes. Each workable primers was further evaluated for polymorphism and heterozygosity against 72 sample described before. 7 out of the 12 loci show polymorphism. All alleles were determined according to a 500 bp marker with Gene profiler software.

By submitting the result to the PHYLIP software, a neighbor joining tree is generated (Fig. 8). The population from Camotes show significant genetic variation with Green Island and Bongao Island respectively (χ², p<0.01). There is no genetic variation between Green Island and Bongao Island (χ²=0.74, p>0.05).

When we look into the topology and compared the result to the direction of sea surface current, we found that there is a current of Kuroshio flowing to Bongao and Green Island (Fig. 9) that make the planktonic larvae reach or leave the island. In contrast, there is a geographic barrier between Green Island and Bongao Island that make the population very constraint to disperse. Green Island is apparently an typical oceanic island and open to larvae that established by surface current. It make Green Island a very important status in reserving diverse marine life before reaching the downstream island like Ryukyu. Considering the pelagic larval duration of about 4 week, it is impossible for planktonic larvae to distribute over 1000 km. So, there must be some stepping-stone between Camotes and Green Island.

5. Local community empowerment through education

To empower local community, we establish a workshop and task force with participation from all relevant sectors including local communities, non-profit organizations, scientists, governmental agencies, and enterprises. The functions of this workshop were to build and strengthen local abilities to solve problem encountered in communities, and to protect the environment they rely on.

In order to implement conservation work based on the local community and
achieve the goal of restoration of the coconut crab, the Coconut Crab Conservation Work Team was formed in April 2003. Members of the work team include local educational institutions, such as elementary school and junior high schools, government organizations, such as the East Coast National Scenic Area Administration, as well as the police and local residents. There were six major lines of work: (1) environmental education; (2) cessation of illegal harvesting; (3) habitat preservation; (4) artificial cultivation; (5) searching for and collecting information on the culture and history of the relationship of coconut crabs and local residents; and (6) development of ecotourism related to coconut crabs (Fig. 10).

Some highlights of environmental education are described below. Members should educate local people and visitors about the importance of conserving the coconut crab, resources, and the environment of Green Island. Activities of coconut crab conservation education related to awareness of local educational institutions, police, and residents were carried out in June 2003. The contents emphasized the biology and ecology of terrestrial hermit crabs and ways to conserve the crab and its habitats. People were informed about important problems which have occurred and were taught how to solve them; moreover, residents were encouraged to look on this as their duty. We also designed educational posters, manuals (Fig. 11), and postcards (Fig. 12) for local people and visitors to promote the concepts of conservation.

We discovered that students are full of curiosity and can identify the simple characteristics of different land hermit crabs; moreover, they renamed this animal using their plentiful imagination. By emphasizing basic knowledge, local teachers and students will be able to influence parents and friends to further join our restoration work.

In order to increase the efficiency of law enforcement in cases of illegal harvesting,
we helped the police obtain more knowledge about coconut crabs and stressed that seizing people involved in such illegal activities is imperative under the circumstances.

The gradual disappearance of traditional culture and resources is the result of shifts in the human ecology of the community. In the process of our presentations, we discovered that residents are aware that resources are rapidly disappearing, and they are deciding to do something about this situation. Taking advantage of this, we let them know that coconut crabs are a precious part of their life, history, and environment.

The conference has been held at 26 April 2005 at Green Island in Taiwan with the theme “Sustainable action at Green Island”. The participants included governmental organizations, local educational institutions, police, local non-profit organizations, and residents. In order to implement the sustainable action in local community, the lecturers composed of an official, the elementary school principal, the proprietor of tourism and local residents. The scholars were invited to be commentators. The conclusion of the conference involved the ways promoting development of sustainable tourism, environmental education for residents and visitors, hiring local people for the investigation and establishing the database of the population of coconut crab, and the conservation strategies for other species.

6. Establishing website for coconut crab conservation network

The whole set of network will be extending to Indo-Pacific Ocean states through a website [http://biodiv.sinica.edu.tw/~coconutcrab](http://biodiv.sinica.edu.tw/~coconutcrab), which is being built now. Besides introducing the unique species, coconut crab, this website also displays the conservation network we do in recent years. We expect that the small islands which have coconut crab distribution can communicate the conservation experience through this global tools.
Conclusion

To prevent the continuing decrease in coconut crab population on Green Island, we recommend five steps. First, ecological corridors for crabs based on local community should be built to separate the crab’s migration routes from the road encircling Green Island. Second, the law on protection from poaching must be enforced. Third, environmental education and communication with local communities should be promoted so the local people will pay more attention to environmental health. Fourth, after our success with larval culture, we also propose to release these juvenile crabs into natural habitat. Five, the entire habitat of coconut crabs must be protected, from the mountains to the sea. For this goal and based the genetic research, we are promoting for building up a native MPA system in Green Island.

The way we have proposed the MPA on Green Island is similar to that of the Farasan Island MPA in the southern Red Sea of Saudi Arabia. Establishment of the Farasan Island MPA included zoning, communities participating in management, enhancement of public awareness, and training (Gladstone, 2000; Howe, 2001). There are increasing numbers of countries which are placing emphasis on both ecological and social aspects on MPA proposals.

Ecotourism and ecomuseum with the MPA also represents biodiversity being regarded as a product to be sold to consumers (Kiss, 2004). Coconut crabs are a unique natural resource of Green Island that is difficult to find on the main island of Taiwan. And this provides a starting point for the goal of managing this MPA. The outlook for an Eco-Island to be established at Green Island. Using coconut crabs as a target, Green Island can also have a special tourism product--coconut crabs—for protecting the island. Beyond that, Green Island can serve as a good example of an MPA for preserving local history, protecting biodiversity, and enhancing local economies. Through our works, we
expect that Green Island can become an Eco-Island, and also empower other social aspects, such as economics, sociology, archaeology, geography, history, etc.
References

Reference to a journal paper:


Reese, E.S. and Kinsie, R.A. III. 1968. The larval development of the coconut or robber crab *Burgus latro* (L.) in the laboratory (Anomura, Paguridae) *Crustaceana Supplement* 2, 117-144.


*Reference to a Website:*

History of Green Island, available at

Fig. 1 The coconut crab, *Birgus latro*. 
Fig. 2  Life history of the coconut crab, *Birgus latro.*
Fig. 3 The map of Green Island (Lutao).
Fig. 4  A glaucothoe of *Birgus latro* hiding in a gastropod shell. This individual metamorphosed to a glaucothoe from 5th zoeal stage on the 27th day and began carrying the shell on the 37th day of its life.
Fig. 5  The method of marking coconut crab by collection fluid and measuring the cephalothoracic length.

Fig. 6  A juvenile crab of *Birgus latro*. It was found in farmland in 2003.
Fig. 7  Profile of *Birgus latro* using primer Hex-GA27 analyzed with GenScan 3000.

(M: marker lanes)
Fig. 8  Neighbor-joining tree showing relationships among the *B. latro* sampled from
Green Island, Taiwan and Camotes Islands and Bongao Island, Philippines. The
column  represent sample from Camotes, the column  represent
sample from Bongao and the column  are sample from Green Island.
Fig. 9  The topology and compared the result to the direction of sea surface current

(The map was modified from google earth 2005).
Fig. 10  Framework of the coconut crab conservation team's endeavors at Green Island.
Fig. 11  Coconut crab manual, emphasizing the relationship among coconut crabs and their natural environments on Green Island.

Fig. 12  Coconut crab postcard. (a) The front of the postcard emphasizes the life history and habits, while (b) the back of postcard states the law and punishment.
Island of World IX Conference  
31 July to 2 August, 2006.  
Maui, Hawaii  
Community Visioning: A strategy for Sustainable Island Living?  

*The case of the Indian Ocean Islands with especial reference to Mauritius*  

*Pynee A. Chellapermal*  
*Director of CEDREFI,*  
*Republic of Mauritius*  

1.0 Introduction  

Sustainable Development has become a popular cliché in the development literature and among development practitioners. Coined in 1992 at the United Nations Conference on Environment and Development at Rio de Janeiro, the concept remains an abstract term for the people. Nevertheless, basically, development is the process by which individuals and communities are able to enhance their capabilities to use resources and improve their welfare in an equitable manner. In this context, a certain number of ‘Small Islands Voice’ practitioners and partners together with the Coastal and Small Islands platform of UNESCO have started, based on their fieldwork, to move forward the concept from a community perspective. Consequently, the concept of ‘Sustainable Island Living’ has emerged. The development of this concept is very timely since the Small Island Developing States (SIDS) are presently moving forward the *Mauritius Strategy* for the further implementation of the Programme of Action for the Sustainable Development of SIDS. This also coincides with the UN Decade of Education for Sustainable Development (2005-2014), which is an additional opportunity to consolidate Sustainable Island Living in SIDS. The integration of Education for Sustainable Development in the education system is one way of keeping local wisdom such as traditional agricultural methods and traditional rules and techniques of fisheries in everyday life.  

Sustainable Island Living embodies a process that enables everybody to enjoy a decent living and a good quality of life in terms of satisfying their needs and it creates an enabling environment for the next generation to fulfil its aspirations. In so doing, Sustainable Island Living addresses the control and distribution of resources, the decentralisation of decision-making, the culture of partnership, good governance, people’s rights, autonomy of the community and participatory approaches. In concrete terms, Sustainable Island Living is rooted in local development at grassroots or community level. The ambition of the concept of Sustainable Island Living is to contribute in translating the abstract concept of sustainable development into reality for the world’s islanders.
Community Visioning is not new in terms of technique especially with reference to participatory methodologies. However, as a process, it can be a powerful tool for new forms of partnership in island communities. At this stage it is important to remind ourselves of the term community. The latter implies a group of persons living in the same locality, and by extension a body of persons leading a common life. In this context, the community is just one member of the continuous ecosystem of the natural environment and therefore it is necessary to understand human beings based on this precept. The community should also be based on equity, inclusiveness and sustainability in order to achieve an inclusive island development system. In this perspective, community visioning is an attempt by practitioners to bring a shift in the way of thinking of communities and empower them to make their own decisions in the context of the development process.

Nevertheless, community visioning should not be confused with the endless cycle of problem solving approaches. Community visioning aims at making people take development decisions that lead the community towards a defined future. This future is shaped by a holistic goal set by the people who make up the community. However, community visioning does not preclude seeking advice, technical assistance and support from outside partners and other national development stakeholders. Indeed, community visioning should be recognised and considered as an integrated part of national development strategies of islands, if this approach is to contribute meaningfully in the policymaking process and add value to programme implementation. Consequently, community visioning is a challenge as well as an opportunity in opening new pathways in popularising and moving forward Sustainable Island Living.

2.0 The Indian Ocean Islands

The Indian Ocean region is made up of a set of islands, which are in majority archipelagic states namely Comoros, Maldives, Mauritius, Seychelles, Sri Lanka and Zanzibar. However, in the context of this paper, the analysis will be confined to Comoros, Maldives, Mauritius and Seychelles. A thorough analysis will be made of the regional context including the geopolitical and socio-cultural context, the existing vulnerabilities and the potential resilience as factors impacting on the development process. In spite of the heterogeneity and diversity of the island nations of the region in terms of different geopolitical affiliations, history and culture, they share as SIDS common problems and issues. However, these islands have not experienced community visioning per se or even participatory development as part of the sustainable development process. The latter has known varied degrees of success in the Indian Ocean region. In fact, the islands concerned continue to be buffeted geopolitically, politically, economically, socially and culturally by joint internal and external forces, which have seriously hindered the development process.
2.1 From Decolonisation to Nation Building

Indeed vulnerability is a common feature of the small islands of the region, and this makes them ecologically, economically and geopolitically the prey of internal and external shocks. Vulnerability is not a new concept, but its impact is growing due to new challenges. Development has always been a challenge and it dates back to the colonisation period. As the islands were uninhabited, they had no pre-colonial history except Comoros and Maldives who had their own indigenous cultures before the imposition of the European colonial rule. Consequently, the islands were mostly immigrant island-nations, crossroads of Indian, African, Chinese and European peoples. With the decolonisation process, nation building became a priority for the political leaders of the day. As in most post-independence nations, the political elite had to unify the whole country behind the government of the day. The drive in such a process came from the political movements of the respective island states and who later assumed the political leadership of their respective countries. The post-independence period was very difficult for most of them in ensuring the development of the islands and in addressing the burning problems of their respective societies. Consequently, the nation-building process was undertaken through the modern state with its centralised system and its bureaucracy having its own rules and rationality. This process of consolidating the nation-state is going to impact seriously on the development process in the post-independence period and will leave its footprint in the way forward towards sustainable development.

However, the experiences of nation building varied according to the political circumstances, philosophy, historical heritage and values. In this context, the Seychellois experience of democratic government and multiparty system was short-lived, as the coalition government was overthrown in 1977 through a military coup nearly nine months after the independence of the archipelago. This event heralded the instauration of a one-party system with a very powerful centralised bureaucratic system on the Seychellois society. The one-party state was considered as the only instrument for developmental change and through its party branches, the whole archipelago passed under its absolute control. Consequently, the participation of the citizen was channelled through the one-party system leaving no room for an autonomous participation of the people in the development process and in developing their own initiatives. This legacy of the one-party state has left its footprint on the Seychelles development strategy and programme. Everything is still centrally controlled in spite of the existence now of a multi-party system. The private sector and civil society have not been able up to now to consolidate themselves and occupy the role that they should in the development process. People’s participation has still a long way to go.

In the case of Comoros, the decolonisation experience was different from that of Seychelles. Comoros unilaterally declared its independence in 1976. Independence from

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1 Seychelles became independent in 1976 and a coalition government was formed with a sharing of power by the two major political parties of the archipelago. In 1977, Abert René of the Seychelles People’s United Party, the then Prime Minister, initiated a military coup against the President of Seychelles, Sir James Mancham from the Social Democratic Party.
France was never prepared and the decolonisation process led to the excision of Mayotte\(^2\) from the other three islands of the archipelago. The independence of Comoros marked the beginning of a decade of instability characterised by mercenary actions against successive governments and in-fighting within government leading to military coups. During the past decade, Comoros has gone through chronic instability jeopardising the economic development of the archipelago and creating such frustration that it took the form of an attempt of the break away of the two other islands namely Anjouan and Moheli from Comoros. Consequently, the archipelago has suffered serious set back from all points of view and the villages (community) were mostly left to themselves. As the government of Comoros was in difficult financial situation, the population survived from remittances from abroad especially from France. Following the political agreement and the granting of devolution to the three islands of the archipelago last year, the situation is slowly returning to normal under the aegis of the African Union. The reconstruction of the economy, the development of stable institutions and the consolidation of the democratic space, in the context of a federal state, are current priorities. Confidence building in the current leadership remains to be seen. Thus, community visioning could be an opportunity for the villages of Comoros to contribute their share in mainstreaming Sustainable Island Living in government development policy and in promoting an autonomous local development at village level. This approach can contribute in developing alternative development strategies to contribute in overcoming the vulnerabilities of the archipelago.

In the case of Maldives, the colonial history is not that dissimilar with the other Island States, except that the archipelago was a British protectorate until it gained its full sovereignty in 1965 and was transformed from a Sultanate to a Republic on 11 November 1968. This period marked the beginning of a strong personalisation of a presidential regime without any political parties and a democratic culture. The State consequently has become until today the main, if not the only, instrument of modernisation and change. This situation is reinforced by the fact that the government owns all land except for a few plots of private land on Male. There is therefore no effective experience of multi-stakeholders approach in development.

Mauritius has a long track record of a parliamentary democracy, which dates back to the decolonisation process with a strong and powerful executive through a cabinet government and a powerful private sector. However, the civil society movement is relatively weak. As a multicultural society with people originating from the three continents namely Africa, Asia and Europe, nation building has been an on-going complex process. The main concern has always been how to ensure the coexistence of such a diversity of people. As the population is divided on ethnic lines and is exploited politically to create division through the practice of communalism against the principle of meritocracy, the sense of belonging to a nation is relatively weak.

The development of a policy of welfare state has reinforced the process of nation building through a free health system and education for all and a social aid system for the

\(^2\) The Comoros is made up of four islands namely, Grande Comore, Anjouan, Moheli and Mayotte. The latter was excised from the archipelago at the time of independence and has remained a French territory.
disadvantaged groups. This policy is deep rooted in a centralised system of government with few powers to local authorities (municipalities, district councils and village councils). The centralised policy system has consolidated the power of the state and reinforced the political culture. The latter contributes in reaffirming the supremacy of the political class in the field of development. Politicians including ministers, mayors, presidents of district councils and MPs are perceived by the community in the villages and towns as the only persons to have solutions to their problems including sorting out petty things such as simple administrative hassles. In the end, the politicians pose themselves as problem solvers without necessarily in a sustainable development perspective. This creates a culture of dependency on State institutions and little space is left for community initiatives.

In spite of different historical process, nation building, in the island states of the region, is an on-going process and it has experienced varied degrees of success in each island state. There is an absence of democratic processes and values in island states like Seychelles, Comoros and Maldives, that favour participation of the island communities through the villages as the basic community structure. Unfortunately, the task of the government of the island states is made complex by other considerations such as ethnicity, racial considerations, separatist forces and external foreign interference. If Sustainable Island Living through community visioning is not promoted and developed, the issue of disintegration of the island states such as Comoros will emerge again. Otherwise, a closed society without any prospects for the development and consolidation of the democratic space may lead to a brain drain of its professional and other trained personnel. The situation in the Seychelles and Comoros and to a lesser extent in the Maldives illustrates quite well the seriousness of this issue.

The few available financial resources from the international aid system are absorbed by the State, and the power of NGOs and Community-Based Organisations (CBOs) is so weak and lacks visibility that they cannot attract resources or the government through its bureaucracy that very often objected to the allocation of resources to structured civil society organisations. The actual practice in the Seychelles and Comoros are cases in point. The dependency syndrome in the case Mauritius is also a challenge for the consolidation of the democratic process and governance. In any case, sustainable development is closely linked with democracy and freedom. The greater the space for participation of the community in the development process, the greater will be the degree of freedom of the people. Most communities are used to having decisions made for them and they are still not used to the idea that they have the right to decide their own future.

The challenge lies in the development of a sense of belonging to the State while favouring both the consolidation of the nation and the community in the various local geographical areas in order that each entity can support the other through the community visioning process in their quest for Sustainable Island Living. Such an approach requires the consolidation of the development process so that there are more policy options and autonomy in fulfilling the development objectives. However, during the past decade, the autonomy of the State has been under pressure as the globalisation process unfolds itself.
2.2 Globalisation and Vulnerability of Islands

The inter-state system and especially the nation-state structures governing the diverse island societies of the Indian Ocean region are increasingly under stress and they are more and more powerless in controlling the impact of globalisation. Instead, globalisation has become a permanent threat to nation-state and it is exacerbating the frustration of minorities and the grievances of marginalised groups in relation to equity and social justice in the development process. In certain cases, it may lead to devolution if not to the disintegration of the nation-state. The creation of three autonomous States in the case of Comoros and the devolution granted to Rodrigues island in the context of the Republic of Mauritius illustrate quite well the limits of having a centralised State. Indeed macro-economies are not necessary operating in coherence with local micro-economies.

As globalisation unfolds, more opportunities are created in terms of liberalisation and privatisation of the economy. In the wake of liberalisation, the national economic landscape of the islands is being transformed. Consequently, the local environments at community level or at village level are under severe pressure from big economic projects in sectors such as tourism, fishing and development of infrastructures. These projects are imposed without any prior consultation and this practice leads to the weakening of local communities and it challenges the stability and livelihood of the community of these regions. Very often national governments are powerless to resist the conditionalities of foreign investors and other multinational firms. It is also difficult for the community and other civil society organisations to campaign against globalised inequities and the weakening of local communities, their skills and trade. The expansion of tourism activities in Mauritius is currently challenging the livelihood of artisan fishermen and at the same time reducing the access of communities to the beaches. In the same vein, the WTO rules and the end of protectionism are having serious impact on the main exports of islands of the Indian Ocean such as tuna in the case of Seychelles, and sugar and textiles in the case of Mauritius. The economic restructuring of the islands of the region is marginalising more and more communities and is creating a new category of poor people. The laying off of Mauritian workers in the sugar and textile sectors respectively illustrates quite well how worldwide trade liberalisation is impacting on communities.

3.0 Community visioning, a form of resilience for islands of the region.

At a time when sustainable development has not provided the expected results so far, the search for sustainable development alternatives is more than a necessity. In a globalised world, community visioning sets the stage for a more decentralised and participatory framework at community level. Indeed, it can contribute to a form of managing change through the development of economic alternatives. However, the adaptation to change requires the integration of the ways in which communities do things. Consequently, community visioning can contribute in assisting island states in promoting and fostering local development and democracy.
3.1 Participation

Participation of the people through their community (the villages or urban areas) constitutes the basis of community visioning. Participation is not a new concept and it flourishes in most of the UN documents on sustainable development, but too often it is used only as part of the wishful thinking discourse. Indeed, concrete participation of the people in development processes is what is lacking in the Indian Ocean region. As it has been indicated in the other sections, the challenge is how to change to the current development paradigm and to demonstrate that there can be a win-win situation for both the state and the people by creating an enabling environment for community visioning.

Participation of the community provides a sense of ownership of the development process and it constitutes an essential element in the appropriateness, the implementation and the sustainability of actions. The communities know their special needs better and they are better placed to shape their destiny by getting more engaged in the development process. Based on our own experiences in project implementation at grassroots level in Mauritius, it is clear that a collegial management style and the recognition of the traditional knowledge of the community are more conducive to build confidence and trust among beneficiaries and support organisations. This is a key to organisational quality for the development of popular participation in the life cycle of developmental projects at community level. Everybody knows about these principles, but it is another story when it comes to policy implementation.

Finally, participation should be viewed as a process in order to ensure that the community is motivated enough to have a stake in its own development. The danger is in the dynamics generated by the project whereby participation could be reduced to a way of getting people to agree with the objectives of the project. Consequently, participation should go beyond fulfilling technical objectives and really focusing on the issue of motivation for their involvement in the local development process.

3.2 Community Mobilisation

It is important to understand that participation is a basis for Sustainable Island Living as a fundamental building block. In this context, participation must be thought as motivating people to become stakeholders of their own development, and the community must be able to influence decisions that affect its members. Consequently, the islanders should internalise that they have a productive role to play as members of the family, the community and the society. As far as possible, the decision making process must be close to them. In this perspective, the structuring of community life at village and urban area level is a necessity so that they can become effective support structures. This should be accompanied by an empowerment programme in order for the community to ascertain its autonomy in relation to all structures of power.

3 CEDREFI has been working during the past fifteen years in collaboration with Community Based Organisations in Mauritius and has been developing projects for the empowerment of the community. The latest project took the form of a pilot project in a coastal village on Climate Change in the context of GEF/SGP.
In order for local people to lead development, one should not focus on the community to the detriment of the individual. The individual must be involved as part of the group and it is human nature for individual actions to be based on a certain degree of self-interest. Consequently, community visioning should ensure the existence of enough incentives for individuals to engage themselves in community processes and to become a change agent in the community visioning. This engagement will require helping them to have choices in moving the Sustainable Island Living agenda and also empowering them as individuals who are part of the community.

3.3 New Policy Framework

Community visioning requires to be promoted and fostered while bearing in mind the commitment and the national priorities of the state. In this context, it is vital to change the mindset of policymakers and that of the bureaucracy responsible for the programming and the implementation of policies. Policy implementation requires dialogue and the community visioning must be mainstreamed in policies. However, dialogue is not automatic, and it requires a culture and it must be nurtured. This is the difficult part of changing mindset of people in the implementation of community visioning. Indeed, what is required is not a set of guidelines on how to dialogue and promote participation. The priority is to remove the barriers that are part of the culture of work within the government administration in order to develop high quality promotion of participation and dialogue. This situation can also be altered by valorising the traditional knowledge of the community such as that of the artisan fishermen, the small farmer and the sugarcane labourer, and recognising the fact that the community does have knowledge and know-how on the ways to address problems facing local development. Otherwise, sustainable development will be confined to technocratic approaches, which may eventually lead to a crisis of confidence in professional knowledge. The current relationship which exists between the fishermen community and the Government of Mauritius illustrates quiet well this situation.

3.4 A New Political Discourse

For community visioning to take shape in the region, it requires a new political discourse that recognises the community as the focus of development at local level. Unfortunately, up to now, local authorities in Mauritius for example, do not have a local development agenda, and what exists at national level in terms of national development strategy is not implemented in a decentralised manner at local level. Due to lack of capacity, local authorities’ leadership does not have a clue of the policy implications of local development and implementation. This is an additional reason for the community to act as pressure group in order to force Government to put in place new policies with the participation of the community at local level. Consequently, this requires a change of political discourse in terms of autonomy of local authorities and the role of local communities. There is also a need to refocus the political discourse which is confined to ‘alleviating of poverty’ and ‘job creation’ to how one can change people’s engagement and commitment in their own development process and by extension how government
will create space for the mainstreaming of the community visioning process in national policies.

4.0 Conclusions

Community visioning is one way for the islands of the Indian Ocean to become more resilient in finding new ways of ensuring a Sustainable Island Living for their people. There is not a model of one size fits all, but there is a common thread which is the development of Sustainable Island Living based on certain community principles such as putting the community at the core of policy-making, sustaining effective practices through participatory approaches, building community resilience and ensuring common ownership of the process. In spite of the fact that the constitutional status of each island state varies, some basic principles of community visioning can be introduced by civil society organisations themselves in moving forward the agenda of the Mauritius Strategy. In this context, the first challenge for civil society organisations themselves is their preparedness to recognise and promote the autonomy of the community in the context of their own work. The development of the autonomy of the community by civil society partners will contribute in making community visioning take off in island-states like Mauritius and Comoros.

Community visioning also has the potential to promote the motto “Think globally and act locally”. In concrete terms, the villagers and people living in urban areas should have the opportunities to undertake a critical evaluation of their local environment. Local development should become the cornerstone of Sustainable Island Living and the community alone will not be able to forge its way forward. The development of strategic alliances with NGOs, Community-Based Organisations (CBOs) and other civil society organisations is a determinant factor in moving the agenda forward. In this context, capacity building on how to work in a cross-sectoral manner is necessary if we want to engage ourselves in Sustainable Island Living.

How resources are being used, exploited and abused needs also to be understood locally, regionally and at international level. Consequently, regional collaborative programmes among the Indian Ocean Island States need to be explored as very often the solution to the local developmental problems are found over and above the changes in action in the field or at national level. This requires regional partnerships and the raising of awareness and mobilisation of governments of the region.

Finally Sustainable Island Living must be rooted in community visioning based on a change in lifestyle, a decentralisation of power and a return towards more participatory community processes.
Is it the right alternative development?  
A case of Chigu area in Tainan, Taiwan

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Abstract

Hsieh et al. (2004) point out that most of the wetlands in Taiwan have been filled, over-exploited, or polluted, and this has injured coastal ecosystems and damaged local public welfare. Sustainable development depends on the harmonious relationship between humans and all other living creatures and their supporting ecosystems. Wetlands that serve as sanctuaries, preserves, or reserves of natural and/or cultural heritage should be designated as protected or reserved wetland. Wetland such as aquaculture ponds serve as feeding grounds for migratory shorebirds, including the most famous, the black-faced spoonbill, and serve in various roles in environmental education, ecotourism, appropriately operated pond culturing, and fisheries. The goals for managing protected and reserved areas are to maintain both the integrity of the wetlands ecosystems and their biodiversity. Among landuse forms, ecotourism may be the most attractive to the public since it can generate economic value, thus compensating what has been lost to regions where development is prohibited such as reserves. In addition, ‘deep’ ecotourism reduces consumption of natural resources, and its success relies heavily on healthy environments at particular tour sites. It is also often incorporates the wise utilization of natural resources that have special importance to local cultures through local community participation. Monetary gains provide local communities with an alternative means of maintaining and improving their living standards. As a result, ecotourism helps the sustainable development of coastal rural regions. In addition, Education raises community awareness, and more importantly, education is an effective means to empower communities to become involved in identifying the management problems of local environmental and natural resources and developing local solutions.
Similar to other island states, Taiwan faces problems of landuse and social issues and is slowly debating about what is the ‘right’ development that is sustainable. This paper will present an area which has potential for listing on the list of Ramsar sites but which has been under threat of industrial development and is currently used as an aquaculture and ‘shallow’ ecotourism mix. A study of a more appropriate ‘deep’ ecotourism might show the development directions for the community, interested parties, and governmental agencies.

**Keywords:** Wetland, Ecotourism, Community-based Sustainable Development, Environmental Education, Ramsar Reserve
Introduction: Site information

Tsai et al. (2002) indicate that Chigu Lagoon is the largest remaining lagoon in Taiwan and a semi-enclosed shallow (average depth of 1 m at low tide) tropical coastal lagoon; it has distinct dry and wet seasons, lying between the mainland and a barrier sand bar in southern Taiwan (23°8’N,120°4’E) and covering about 9.6 k\textsuperscript{2} of surface area. It is continuously open to the sea through two narrow breachways in the sandbar. Chigu Lagoon exchanges water with the ocean once a day through two inlets at its northern and southern ends. The exchange is critical for maintaining water quality in the lagoon. The tidal range is about 1 m. Climatic data derived from the local weather station during 1987-1992 shows that during the dry season of October-April, mean monthly rainfall normally does not exceed 50 mm and that from May to September, average monthly rainfall frequently exceeds 100 mm. Sunshine is lower during November-April (100-115 h month) and higher during the rest of the year (123-180 h month). Water temperatures range from about 33 °C in summer to about 18 °C in winter. The small volume of the lagoon makes the salinities responsive to changes from freshwater input and evaporative losses. Consequently, salinities are lower in summer, particularly near Chigu River (about 10) and higher in winter (about 34). North-east winds are extremely forceful from October to March, so wind speeds are greater during this period than during the rest of the year. These winds maintain a high water circulation and cause mixing of the water column in the lagoon. As a result, the water in the lagoon remains turbid, ranging from 20 to 40 NTU (Lin et al., 1999). Therefore, it is not always suitable for developing tourism all year round, considering the weather factor. Normally, there are more tourists during the dry season but not on windy days. In addition, the restricted exchange with the ocean due to barriers and the relatively small volume of water make coastal lagoons particularly sensitive to the impact of human activities (Nixon et al., 1982).

Chigu Lagoon receives discharges providing nutrient-rich water from Chigu River and from five small creeks and draining mangrove swamps and surrounding aquaculture
ponds. The land surrounding the lagoon varies from mangrove swamps and tidal mudflats to aquaculture ponds producing fish, shrimp, and shellfish. The lagoon has become the most important centre for fishing, oyster-hanging culture and shellfish collection in southern Taiwan and is developing into a popular ecotourism destination. In addition, study by local scientists, Su and Hsieh (1997) has identified 218 species of shells and 32 species of crabs in the Chigu coastal area. They have also found that Chigu wetlands are important habitat for migratory birds in the Asian-Australian flyway.

Despite the Government’s declaration designating the surrounding area a mangrove and wildlife reserve site, attempts to build coastal industrial parks have continued (Lin et al., 1999). In order to prevent such a threat to local community and environment, the following section will review the possibility of becoming an internationally recognized reserve for conserving ecological and cultural heritage and an anti-industrial development movement by conservation groups and local people will also be described.

**Chigu wildlife Conservation Area: A potential Ramsar site in Taiwan**

According to the Society for Wildlife and Nature (2002), the Tainan County magistrate announced that 300 hectares within a 407 hectare Major Wildlife Habitat Area have been designated as a black-faced spoonbill (*Platalea minor*) reserve which is called the Chigu wildlife Conservation Area. It is estimated that at least half the population of black-faced Spoonbill come every autumn to pass the winter in the wetlands at the Tsengwen River estuary in southern Taiwan. This large migratory waterbird is mainly restricted to coastal areas of East Asia. Not much is known about the species, its range, breeding grounds or migration routes (Wang, 2003). In 1995, the best estimate of the population is about 400 individuals, making it one of the rarest birds in the world. The largest congregation of this species anywhere in the world was in January 1995 at the Tsengwen River Estuary, near Tainan in southern Taiwan, when 286 birds were counted. There are only three known major wintering sites for black-faced spoonbill in
the world, that is, the first at the Tsengwen River estuary, Taiwan; the second at Deep Bay (including Maipo Marshes Nature Reserve) located between Hong Kong and China; and the third at the Red River Estuary of Vietnam; with smaller numbers being recorded in China, Japan, and other sites in Taiwan (Chen C, 2002).

Being so rare, the Black-faced Spoonbill faces serious threats to its survival. The Wild Bird Society, Republic of China, joined BirdLife International (an international non-government agency) at BirdLife International’s twenty-first meeting in August 1994 and invited international experts with their corresponding expertise in research and conservation to help develop an Action Plan for the Conservation of the Black-faced Spoonbill. Following a call for support from various agencies, the Council of Agriculture answered with financial and technical assistance. A draft Action Plan was prepared over January 16-21, 1995. There was a public forum held to announce the contents of the draft Action Plan, which was then sent out for review to government agencies, conservation NGOs, and academics. The goal of the Action Plan for the Conservation of the Black-faced Spoonbill is to plan and coordinate conservation and research directions, and to try to generate support from governments, NGOs, and other concerned individuals for the conservation of this species through relevant research leading ultimately to some concrete actions. The document contains the latest information on the species’ distribution and related biological and conservation status. Because there are obviously many missing pieces, a priority of the plan is to conduct basic research. Already a few birds have transmitters that have enabled preliminary information from satellite tracing in early 1999. All the habitats used by the Black-faced Spoonbill are facing threats. Important among these are loss and degradation of habitat, mostly resulting from development pressures and the pollution associated with high human population density. Expanding agricultural land and aquaculture ponds, and construction of industrial zones and housing development are the main causes of loss of habitat. In addition, there are other serious threats, such as the effects of pollution and competition for declining food resources with other animals, and disturbance from human activities. People will have to work together if this species is not to become extinct in the near future. Because its habitats extend across national boundaries, there is no other way except cooperation between nations.
Species-specific action plans have broad applications for protecting wildlife on the brink of extinction. These species-specific action plans are widely used documents in Europe and America, but the *Action Plan for the Conservation of the Black-faced Spoonbill* is the first such document to be formed for an Asian species. The Action Plan is to be used as a reference for each country’s own conservation work but has no legal status. Because of its international political status, Taiwan cannot be officially involved in international treaties, programs, and agencies. Nevertheless, despite not being formally recognised in international forums, Taiwan still makes an effort to contribute to global conservation. Thus, if the habitats could be nominated as Ramsar sites according to the Ramsar Convention, it would be a great assistance for ensuring the survival of this species, particularly as there is a major threat to the Chigu site, as described below (Chen C, 2002).

**Chigu and the Anti-Binnan Movement**

The proposed Binnan Industrial Zone is planned close to the Chigu wetlands, the wintering home of the Black-faced Spoonbill. The planned industrial zone is a development plan at the heart of which is the Tuntex Company, which wants to invest in the development of a seventh naphtha cracker special industrial area, and the Yielung Company which wants to invest in the construction of a steel mill. Investment in the naphtha cracker refinery project will altogether reach about US$ 10,000,000,000, while the total investment in the Yielung steel mill will run to about US$ 4,800,000,000.

These two investment plans are situated in Tainan County, on the western side of the Chigu Township that just next to Chigu Lagoon. The Taiwan Salt Works currently controls the 1330 hectares sought by the Tuntex Company, and the 1030 hectares required by the Yielung Company, and apart from the sixth naphtha cracker, this is the largest private investment plan in Taiwan. Besides the strong opposition to the planned
refinery and steel mill projects from local environmentalists and ecologists, there are international environmental concerns also adding pressure to the Taiwanese government, and even possible economic sanctions are suggested.

Hester et al. (1998) report that the proposed Binnan Industrial Zone will certainly impact upon the ecology of the Black-faced Spoonbill. Wastewater discharge and air pollution from the complex presents a serious threat not only to the wildlife habitat but also the aquaculture industry. Associated industrial and urban developments in the area are expected to fragment roosting and foraging habitat of the black-faced spoonbill. In addition, water demand from the industrial complex would require massive inter-regional water transfer in southern Taiwan and would require building of additional dams at the cost of hundreds of billions of NT dollars (Kondolf and Hou, 1998). Furthermore, the proposed complex would also produce the equivalent of 25-31% of Taiwan’s total CO₂ emission at 1990 level (Hsieh, 1997). All environmental impact assessments reported that continuing with these developments will damage the habitat for the birds, yet the Tainan County government refused to consider alternative plans in the beginning. The predicament of the politicians and economists is that these two investment projects will be economically beneficial and provide employment opportunities, yet conservationists believe that the ecological and social costs are far greater than the benefits and that ecotourism is a preferable alternative development (Chen C, 2002).

**Present situation: Ecotourism and Environmental Education**

Hou (2000) states that through numerous publications, television documentations and academic conferences, a new cultural and ecological identity of Chigu has been constructed and reinforced. This newly constructed identity initially intended as a tactic against Binan in turn has had a profound effect on the movement and the movement organizers. As an initial step in developing tourism activities, the fishermen and residents of Chigu nearby Lungshan Village began to organize flat-raft tours to the
Chigu Lagoon for tourists. Clam collecting festival at the edge of the lagoon also attracted thousands of visitors to the area. In recent years, newly established environmental organizations have set up bird-watching stations and offer regularly held environmental education program, as well as guided ecological tours for tourists. There is a private resort providing accommodation and restaurant service combined with an ecological and cultural information center which has been set up in Chigu using abandoned buildings among the fishponds.

On the flat-raft tours, visitors not only have a chance to see the Chigu Lagoon and the coastal sand dunes and wetlands, they also get to learn about traditional fishing practice and oyster cultivation in the Chigu Lagoon through the fishermen. In some cases, the tourists also get to taste a delicious meal of fresh local seafood. For the environmental education programs, the content also includes introduction to both natural and cultural information and history of the area. For example, a complete program provided by the Tainan County Black-faced Spoonbill Conservation Association allows the participants to learn about the biology of black-faced spoonbill, coastal vegetation, fishery resources, history of the Chigu Lagoon, it also informs the visitors about the ethics of ecotourism. In addition, the tour guides (mostly university student volunteers) would point out the impact of the proposed Binnan Industrial Complex on local ecosystems and communities (Hou. 2000).

However, due to lack of proper planning of hospitality services, most current ‘shallow’ ecotourism programs are just similar to short school excursions that are treated as outdoor education, normally a half-day or one-day visit without staying overnight. Furthermore, within the school system, the huge safety responsibility that goes with taking a large class out of school makes teachers reluctant to take the class beyond the classroom (Chen, P., 1993). Therefore, a ‘deep’ or truly appreciated ecotourism experience is hardly achieved by most visitors.
Nonetheless, these environmental education activities have been effective in building support among the public and the media, and at the same time transforming the image of the area from an economically backward region to an area of scenic beauty and ecological importance. The tours and festivals become an effective means of mobilizing the local communities. The organizing efforts involving the residents and the local environmental groups also provide the basis for the development of community-based ecotourism. The content of these programs also influence the form of local ecotourism development. Within a few years, tourist coaches were taking hundreds of visitors to the area during weekends and holidays. The local Tainan County Black-faced Spoonbill Conservation Association estimated that a total of 50,000 people visited the site in 1999. The impressive number of tourist coming to the area provides a strong economic and environmental argument against the Binnan project. As a result, many local Binan supporters, mostly village landowner and county legislators, have reversed their position and supported the tourism development (Hou, 2000). In addition, the changeover of County Government in 2000 also plays a key role on developing tourism at Chigu Lagoon.

Hsieh et al. (2004) advocate that one of the key elements for the successful management of a coastal wetlands is the establishment of a cooperative coalition involving participation from all relevant local communities, non-profit organizations, scientists, scholars, governmental agencies, and enterprises. Cooperative partnership can help increase the benefits to ecosystems and all users (Kelleher and Kenchington, 1992). Similarly, the Conference on the Management of Black-faced Spoonbill Conservation Areas took place on March 16 and 17, 2002 in Tainan. It was agreed that local residents should be consulted and their experiences considered in the planning of relevant details and the success of management of the reserve would require assistance and participation by the local community, including fishermen. It is hoped that the reserve can be used to develop ecotourism at an international level. Plans are being made to establish a national scenic area in the greater Chigu area (Society for Wildlife and Nature, 2002).
Conclusion

The government and people of Taiwan are committed to global conservation and very much wish to join the international community by gaining membership of international organisations and becoming party to international treaties, including Ramsar. The *Action Plan for the Conservation of the Black-faced Spoonbill* provides a good blueprint for ensuring the survival of the Black-faced Spoonbill, yet without declaring the Chigu wetland a Ramsar site, the goal of the plan may be in vain. Becoming an internationally recognised conservation site not only gives better management guidelines, it also provides governments in Taiwan with great political incentive to action. Taiwan is trying extremely hard to secure official international recognition and demonstration of a willingness to act in scrupulous accord with international treaty regimes is an important means of getting such recognition.

The creation and continued existence of nature reserves is usually the result of conflict over land use from different interest groups. There are guidelines for managing and planning nature reserves and the ultimate goal should be for wise land use and a sustainable state of human impact upon the environment. Once this is achieved, there will be no further need for setting aside and managing nature reserves, because the short-term strategy will have accomplished its aim. Thus, the author argues that reserve systems are transitional means to conserving natural resources until such time as there is no longer a need to limit human behaviour, when human beings live harmoniously with their surrounding environment.
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Impacts of Territorial Inundation on Small Island States: An Analysis from the Perspective of International Politics and Law

(Paper Draft)

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Abstract

Sea level change has particularly jeopardized small island states, victims of global climate changes. The loss of state territory indeed raises not only ecological disaster in the field of environmental politics, but also the issues of law and sovereignty. Land loss changes the boundaries of territorial waters and Exclusive Economic Zones, important for their economic value. Complete inundation raises the question of residual rights of a state that has "vanished" in an unprecedented way. Hence, the issue raises interesting questions of international relations theory: what is the abstraction called the sovereign state and how is related to or distinguished from the physical reality of territory? What happens if a state looses its territory to a “natural” process that is attributed to the industrial activities in other states? Does the erosion of physical territory produce an erosion of sovereignty? Can sovereignty exist separate from territory? This paper attempts to probe questions above through the nexus drawn between territory and state sovereignty. I firstly reveal the significance of sea level change on small island states by illustrating Tuvalu, and then define it as a sovereignty question for both sinking states and for those alleged to be responsible. Small island states may face the loss of territorial statehood but polluting states could face international accountability (or at least challenges) for their domestic economic activities. Third, the analysis moves to bring this issue into the context of international law and the principle of sovereignty. I argue that the Westphalian nation-state, which is defined according to its territory and its boundaries, cannot provide effective resolution to respond this new issue. The need to be considered by the academic circle and powerful sovereignties is essential and present. Finally, the paper further suggests new approaches to face this issue and its implication to interstate environmental diplomacy.

Key terms: sovereignty, sea level change, small island states, state territory, international law, international environmental cooperation
INTRODUCTION

The tsunami disaster in December 2004 inundated a half of capital of Maldives, a small island state (SIS) in the Indian Ocean. The Maldives Tourist Office even ran an ironic advertisement urging tourists to come and visit Maldives before it is too late (*Space Daily*, March 2005). A storm hitting the South Pacific in November 2003 caused many islands to be completely submerged, including 95% territory of Kiribati and nine islands in Tuvalu, another two small island state (*Pacific Islands Report*, December 2003). While the islands themselves were uninhabited, the international community gradually acknowledges the phenomenon of sea level change produced by global warming, a major effect accompanied with the deterioration of the global ecological system. As early as November 2001, Tuvalu announced that its entire people would migrate to New Zealand as a result of its slowly diminishing geographic territory (Kirby 2001). Koloa Talake, the Prime Minister of Tuvalu, further threatened litigation in the International Court of Justice against Australia, claiming industrial pollution was contributing to the inundation of his country in 2002.\(^1\) Speaking at a Commonwealth meeting in February 2002, Talake said, “Flooding is already coming right into the middle of the islands, destroying food crops and trees which were there when I was born 60 years ago. These things are gone, somebody has taken them and global warming is the culprit” (*Space Daily*, March 2002).

Attempting to boost the visibility of their plight, Tuvalu, Kiribati, and other small island states have raised the issue of sea level change at various international forums, including the United Nations, the South Pacific Forum, and the South Asian Association for Regional Cooperation (SAARC) (Allen, 2004: 755). With support

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\(^1\) After an election in August 2002, the new Prime Minister of Tuvalu said that the legal efforts would not be pursued (*Space Daily*, 25 August 2002; BBC News, 4 March 2002).
from the UN, they have also worked in response to this situation through the Alliance of Small Island States (AOSIS) established in 1993.\textsuperscript{2} The scenario raises various questions of marine ecological conservation, sustainable development, challenge of sovereignty, and people’s relocation and immigration, and contained several emotional appeals: a humanitarian concern for displaced people, sensitivity to Third World poverty, and moral questions of who were responsible verses who was suffering.

As a North-South issue, sea level change had resonance, for it seemed particularly cruel that small and poor island states like Tuvalu and Kiribati were to be the first major victims of global climate changes (Hay, 2001; Kirby, 1999). Pacific island states have received the most attention on this issue due to their particularly fragile ecosystems and persisting stereotypes of tropical islands peaceful paradises. Despite this, these incidents do not receive very much attention internationally. The major polluting nations remain slow to cut their production of greenhouse gases. Even in the SAARC regional forum, global warming and sea level change was but one issue among many.

It was also a controversial issue. The connection between industrial pollution in the North and sea surges in island states is difficult to prove. While the science was arcane, the argument caught the attention of some journalists and environmental activists. The issue has been studied widely. The UN’s Intergovernmental Panel on Climate Change (IPCC) has estimated a global average change of 5-25cms by 2030 and up to 2070cms by 2070 (Watson 1998). These estimates have been subject to criticism as both over- and underestimating the phenomena. However, whatever impacts do occur, they will not be uniform over the entire globe. Certain countries are far more vulnerable to the effects (Gillespie and Burns, 2000:17; Paterson, 1996:12).

\textsuperscript{2} Membership currently includes 43 island states and territories, see http://www.sidsnet.org/aosis/.
Rising seas pose many challenges, the worst being the displacement of local inhabitants, victims of environmental changes they had little control over.

However, sea level change potentially impacts all coastal states. The danger to small states is simply more extreme: loss of scarce arable land or even inundation: vanishing completely beneath the waves. While not a major international issue, even in the field of environmental politics, sea level change is significance for numerous reasons that range from ecology to humanitarianism. Even small amounts of land loss in tiny Tuvalu, only 10 square miles of land lying only 15 feet above sea level, has the makings of a major humanitarian disaster.

The loss or disappearance of state territory also raises issues of law and sovereignty. Land loss changes the boundaries of territorial waters and Exclusive Economic Zones (EEZ), important for their economic value. Complete inundation raises the question of residual rights of a state that has “vanished” in an unprecedented way. What happens if a state looses a large portion of its territory to a “natural” process that is attributed to the industrial activities in other states? Sea level change is a sovereignty question for both sinking states and for those alleged to be responsible. Small island states may face the loss of territorial statehood but polluting states could face international accountability (or at least challenges) for their domestic economic activities.

The scenarios discussed here are predicted (not with any certainty) to occur over the next 50-100 years, a very long time in the world of policy making. However, the issue raises interesting questions of international relations theory: what is the abstraction called the sovereign state and how is related to or distinguished from the physical reality of territory? The issue of sea level change is challenging because of the traditional connection drawn between territory and state sovereignty. The Westphalian nation-state is defined according to its territory, its boundaries, and its
corner of the Earth. Does the erosion of physical territory produce an erosion of sovereignty? Does this have any significance for the future of the sovereign state as presently conceived? Can sovereignty exist separate from territory? This paper attempts to explore these questions, based on existing understandings of international law and the principle of sovereignty.

**SINKED TERRITORY AND SOVEREIGNTY**

**Identifying Sea Level Change Problem**

Among the loss of biodiversity, desertification, deforestation, global warming, ozone depletion, and various forms of pollution, Sea level change is also one of major issues of the broader phenomena of global climate change. The rise in average temperatures around the world, known as global warming and the greenhouse effect, is an outgrowth of industrial society. Global warming is the predicted outcome of an increase in atmospheric carbon dioxide that increases the amount of solar radiation retained by Earth's atmosphere. Atmospheric carbon dioxide has increased dramatically in the past century, due to the use of fossil fuels and the burning of forests. One predicted effect of this increased global temperature is the melting of the vast reservoirs of ice in glaciers and in polar ice packs. The amount of ice at the poles is tremendous. For example, if the West Antarctic icecap were added to the world's oceans, it would raise global sea level by 5-7 meters (Kellogg in Singer, 1989: 54).

However, the science of global warming remains controversial. It is difficult to separate events caused by natural variations or changes and those attributable to human activity. Natural fluctuations may have multiple causes; some sea level
changes observed in recent years may be due to the El Nino phenomena. Other studies claim that Pacific islands are not sinking and that the Antarctic is getting cooler rather than warmer (Christian Science Monitor, 18 January 2002). The consensus position developed over the past two decades is that average global temperature has risen by between 0.3° and 0.6° C in the past century (Paterson, 1996:9). Evidence of the effects of this increase is seen in the shrinking of glaciers and the “poleward and altitudinal shifts of plants and animal ranges” as tropical species migrant northward, southward and to higher elevations (Tiempo, 2001). The consensus view is that this trend will continue in the next century. Sea level change is one of numerous effects predicted by global warming models.

If the consensus view is correct and global warming and sea level change are occurring, the impact will not equally distributed around the world. Coastal states are of course the most vulnerable, especially those with large coastal populations. States with dependence on oceanic resources (fishing, oil, commerce) will suffer more should sea levels change. However, as Paterson (1996: 78) noted, not all coastal states are equal in responsive capacity. Both Bangladesh and the Netherlands are sensitive to changes in sea to level and both have large populations in vulnerable areas. They are not equal in their access to technology and financial resources to combat sea level change.

The states most vulnerable to sea level change are the small island states that are scattered around the globe, some in chains or clusters and others solitary. These island states cannot easily be typified. They range from fairly large, heavily populated places like Cuba (11 million people) to tiny atolls with populations in the thousands like Kiribati and Maldives in the Indian Ocean. The smaller SISs are the most vulnerable, as many lie only a few feet above sea level. Their populations are therefore more susceptible to displacement should land be lost to the sea.
Legal Fundamental of Sovereignty

International politics is defined by sovereignty to a degree far greater than any other concept. Even the notion of power is premised on the assumption that actors are sovereign and wield power in the name of and for the protection/promotion of, state sovereignty. Authority is dispersed internationally and no one locus of authority legitimately predominates. International organizations may serve as moral authorities or as expressions of collective will, but they do not hold sovereignty. That remains the exclusive privilege of the state.

Sovereignty itself is a term with many subtle facets. Several scholars of IR have attempted to unravel the concept of sovereignty and drawn different conclusions. Steven Krasner's 1999 book *Sovereignty* breaks the concept down into functional elements. There are four meanings of sovereignty to Krasner, three of which emphasis authority and control. The first, domestic sovereignty, refers to “the organization of public authority within a state and to the level of effective control” (1999: 9). The second meaning is interdependence, control over cross-border activities. Westphalian sovereignty refers to “the exclusion of external actors” from domestic authority. These three senses all relate to the issue of controlling the destiny of an entity. The fourth meaning Krasner cites does not stress control but rather is a membership trait: mutual recognition and international legal sovereignty.

The concept of sovereignty is strongly connected to territory and territorial jurisdiction. The basic understanding of international law and diplomatic practice is that a state needs to have territory to qualify as a state. Members of the UN are all territorially constituted states with recognized and regulated, though not always uncontested, borders. However, what Krasner defines as “Westphalian sovereignty” is not an essential feature of UN membership. The UN and the US accepted the
membership of the Ukrainian and Belorussian republics of the USSR as UN members, when clearly neither was sovereign in any sense. India became a founding member of the UN when its government was in the hands of Great Britain. One could also question how much Westphalian sovereignty UN members Micronesia, Palau, and the Marshal Islands actual have when the US handles their defense. These anomalies aside, no non-territorial entity is a member of the UN.

Despite the emphasis on territory, there are exceptions. Certain entities, such as the Palestinian Authority or governments in exile have been accorded diplomatic recognition despite their lack of de facto control over territory. However the exceptions themselves speak to the importance of land: governments in exile and liberation movements both claim to represent a legal or moral claim to land. Sovereignty remains tied to territory. Even when claims of legitimacy are based on a “people’s” aspirations, those aspirations are territorial based. Therefore, “people” and “nation” are given a “territorial connotation,” not an ethnic or cultural one (Gottlieb, 1993: xiii). The emphasis on land is more parsimonious: territory is concrete, measurable and more easily set by boundaries. Identity, loyalty, and affinity are more amorphous and subjective.

However, sovereignty is still based in part on population. An authority without subjects is not a state. Territory must be inhabited, at least partially, for it to be regarded as a state. Inhabited, arable lands, and regions that can sustain human habitation are all part of state’s territory. However, the population is still assumed to be present in a coherent, distinguishable parcel of land. Territory and population must coincide for sovereignty to be possible. A dispersed population without a homeland would not be recognized as sovereign.

The final qualifications for sovereignty are diplomatic in nature. An entity must be able to engage in international relations with other states, and enjoy the recognition by other states as a member of the international community. Such recognition would accord the state
the potential to join international bodies, sign treaties, enjoy privileges of diplomatic immunity, and international legal equality. However, non-state actors may play a role in diplomacy. Rosenau (1990) argues that international relations is less about sovereignty as relational principles of authority and bargaining (1990: 40-42). Such bargaining is not the sole province of states, as international NGOs, sovereignty free but significant actors, play a vital role. Nonetheless, states remain the primary actors in international law and diplomacy; NGOs pay a role but mainly in efforts to shape state action.

Despite the importance of the sovereign state to diplomacy, the state itself is not defined clearly under international law. The clearest definitions of international law are located in treaties, the most basic being the Vienna Conventions that govern diplomatic relations and treaty law. The Conventions are highly specific on certain points, but not regarding the characteristics of a state, the Convention on Treaties (1969) goes to great lengths to define the terms “treaty,” “full powers,” “reservations,” and other key concepts but does not define the term “state.” States are defined only in regards to their acceptance of the Convention. What exactly constitutes a “state” is left undefined.

This silence is due to several factors. First, may be a sense that the issue is self-evident. Only states are members of the UN, only states operate embassies with diplomatic immunity, and only states sign treaties. As only a state can be party to a treaty, all those that are parties to the treaty are states. Beyond this circular reasoning lies the political issue of statehood. To clearly define what constitutes a “state” would be to create a clear standard that various aspirants to statehood could appeal to. This could encourage challenges from entities or movements claiming the status of “states.”

Within the field of international relations theory, the concept of the state has also been

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3 The Vienna Conventions in chronological order relate to: diplomatic relations, 1961 (cited here as, Vienna I), consular relations, 1963 (Vienna II), treaty law, 1969 (Vienna III), successor states and treaties, 1978 (Vienna IV) treaties between involving international organizations, 1986 (Vienna V).

4 Vienna I, Art. 2.

5 It is true, however, that international organizations (made up of states) have also signed treaties.
central. The accepted characteristics of state are more clearly defined, as discussed above. An entity with territory, people, and a government therefore merely requires the assent of other states to be regarded as a stated. Nonetheless, the smallest of the world’s states have long been a challenge to conventional notions of sovereignty and the idea of the territorial states. The smallest of the SISs pose the greatest questions. Many discussions of the power of the state as the primary actor in IR have fumbled on what small states like Kiribati really signify internationally. With few resources, small populations, and little landmass, many SISs are often regarded as oceanic versions of Liechtenstein, states only in a technical sense. Economically and political dependent on larger states (usually former colonial powers), the smallest of the SISs are a theoretically afterthought.

Sovereignty of Sea “Territory”

Whether the sovereign state is clearly defined in international law or theory faces many challenges. All nation-states, as conventionally conceived, are under pressure from many directions. A distinction should be made between challengers seeking to rend a state into fragments and those threatening to bypass the state as a social form. For example, a Quebecois nationalist may seek to breakup the existing Canadian state but only to create a new independent state of Quebec. Such secessionist movements do not threat the idea of the state. In fact, such efforts embrace the idea of the state, complete with flags, anthems, and currency. This type of challenge to the state is significant primarily as a general historical trend away from empires and multi-national states. The primary importance of secessionist movements to the issue of sovereignty is scale: how small can political unit be before it ceases to exercise real sovereignty over its destiny? However, secessionist movements do not question notion of sovereignty itself.

More significant to the question of sovereignty are challenges to the authority of the
state from non-territorially based actors. State authority is based primarily on the right to use force and the ability to command the loyalty (or at least submission) of its population. Alternative sources of authority pose a threat the certain states as great as secessionist movements. Transnational movements based on various identities, ethnic, linguistic, cultural or religious are one source of individual loyalty that can transcend the state. Such movements appeal not to state loyalty but to identity. Control of territory is less important than the identity, the ideology, or the cause.

The consolidation of economic and financial power in transnational corporations (TNCs) is a second challenge to sovereignty. Globalization also includes non-commercial transactions: information and ideology. Discursive networks (political, environmental) operate independent of and sometimes in opposition to states. The best example are anti-globalization demonstrations that have occurred around the world, not led by any organized movement but rather a loose correspondence of beliefs held together by the global communications system. Globalization, discursive networks, and transnational identities may represent coordinated political action that is not based on state affiliation.

The power of TNCs to threaten sovereign states has been exaggerated and rejected by most IR scholars, including the author of Sovereignty at Bay (Vernon 1981). However, states are still vulnerable to challenges to their authority over people and their effective control of territory. As states are not equal in capabilities, certain states are far more vulnerable. The USA faces less danger from the power of TNCs, or sea level change, than Micronesia. The key understanding is that the state is unlike any other institution in that it enjoys the power of jurisdiction and loyalty. While other actors, like

6 As the US is responsible for Micronesia’s security, one might question whether Micronesia is fully sovereign. While the concept of the “protectorate” has generally fallen out of diplomatic usage, Micronesia, and the other two former US Trust Territories, Palau and the Marshall Islands, might best be called protectorates, despite their UN seats and embassies.
TNCs may enjoy authority over people, property, and functions, they are not in a position to replace the state as the prime actors in IR (Strange, 1996: 46). While TNCs and in different ways NGOs have assumed authority and functions internationally, they lack other key resources, the command of loyalty and the use of force that states enjoy.

**Identified Consequences of Sea Level Change**

The nation-state persists despite the challenges of TNCs, NGOs, secessionists, and other groups. Sovereignty remains an exclusive legal privilege of states. States also enjoy the physical sources of sovereignty: population, geographic size, natural resources, knowledge resources (technology and education), and legitimacy. These resources are not held equally by all states and many states may lack one or more. States continue to maintain their special place in world politics.

However, the issue of sea level change poses a new riddle. Accepting the consensus scientific position as a point of departure, what are the political implications of this phenomenon? The physical effects can be enumerated fairly easily, indeed some of the effects have been observed. The impacts on human life and society range from the subtle to the catastrophic, although images of “Water World” are cinematic license. The actual impacts of global warming are less cosmic in scale. However, rising average temperatures of even a few degrees would have major affects on climate belts, agriculture, distribution of flora and fauna, and put added pressures on vulnerable local environments. The economic damage of these various changes is more difficult to estimate, although the UN Environmental Program put the figure at US$150 billion per year (UN Environmental Program 2005).

One important impact of climate change is disruption or destruction of agricultural productivity. Changing patterns of rainfall, slightly changed growing seasons, and
the introduction of tropical pests into temperate regions are three probable impacts of changed global temperature. Changing patterns of rainfall could also contribute to the existing phenomena of desertification. However, it is more honest to say that patterns of agriculture will be altered under global warming scenarios. Far northern altitudes (such as northern Canada and Russia) may actually see an increase in agricultural production due to longer growing seasons.

Sea level change itself has numerous potential impacts. One obvious impact is damage or loss of coastal lands. Rising sea levels would erode beach areas, destroy barrier islands, and possibly displace inhabitants (Edgerton 1991, 25-27). The loss of these coastal features would make those regions more vulnerable to storm damage and flooding (Paterson, 1996: 85). The coastal areas of many countries, including China, Bangladesh, the USA, and Egypt, are densely populated and vulnerable to such coastal erosion. Land areas do not need to be entirely flooded for there to be economic or other consequences. Higher sea levels also pose a threat to fresh water supplies if salt water contaminates coastal aquifers (Peterson, 1996: 85). Salt-water contamination has implications for drinking water, industry, and agriculture. Disposal of Wastewater also is potential difficulty, especially in population concentrations (Edgerton, 1996: 34-5). Sea level change also threatens destruction of local ecosystems, including natural habitats for wildlife. This is both an environmental issue, but also an economic one. The loss of aesthetic features like beaches or reefs could negatively impact valuable tourist industries.

However, partial or total disappearance of land areas would affect states’ claims to territorial waters and Exclusive Economic Zones (EEZs). Claims to oceanic resources are based on a state’s territorial expanse. An EEZ is an extension of its (sovereign) territorial sea, itself derived from a state’s coastline. Both the territorial sea and the EEZ

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are drawn from the same coastal baseline as the territorial sea. Loss of coastline or islands would contract the claimable zones. Certain claims may even be based on sovereignty over uninhabitable islands or rocks, if the area has sustained economic activities like fishing or drilling.\textsuperscript{33}

The living resources of the EEZs and territorial waters are often important for domestic consumption as well as for export. EEZs, which may be up to 200 miles distant from shore, allow states to claim exclusive rights to the economic resources.\textsuperscript{8} The mineral, oil, fishing resources of those waters may be claimed, though the waters themselves remain free for navigation (Buck, 1998: 94).\textsuperscript{35} Some EEZs comprise far more ocean area than the territory of their claimants. For instance, Tuvalu with only 26 square kilometers of land, claims 900,000 square kilometers in EEZ ocean space (Watson, 1998: 338). Loss of small islands would have the biggest impact, potentially contracting EEZs by hundreds of square miles.

The loss or degradation of territory has implications for loss of living space. The issue is not simply space, for arable land and inhabitable terrain are always less than the total area of an island. Small islands states are vulnerable to even small changes. While most SISs do not generally contain large populations, most have fairly high population densities, and many inhabitants live close to shore. Internal migration of populations, if even possible, would increase already existing population pressures. Even small changes in coastline can force populations to move, internally or internationally. Recently in Papua New Guinea, 1500 people were reportedly being resettled as their island was sinking.\textsuperscript{9} For very small states like Tuvalu, sea level changes of 20 to 70cms would be catastrophic.

The movement of people poses a final implication of climate change: the cultural

\textsuperscript{8} UN Law of the Sea Treaty, Art.56.
\textsuperscript{9} The large main island of Papua New Guinea is not vulnerable inundation but its coastal areas and many small adjacent islands are (Space Daily, 13 December 2004).
and social implications. Lands partially or totally lost to the sea would threaten small, heavily localized, and already vulnerable, indigenous cultures. The dislocation and dispersion of populations would have devastating consequences for local and national cultures. This would include the loss of ancestral and culturally significant lands and sites as well as the disruption of cultural ties between members of scattered communities. Indigenous languages would also suffer if already small populations were to be dispersed around the world into larger, more hegemonic cultures. Traditions and cultural identities could disappear.

**Consequences of Inundation**

The worst-case scenario of sea level change is complete inundation of an island state. While not a certainty, it is this possibility that has alarmed the governments of Tuvalu, Kiribati and Maldives. Sea level change will likely occur slowly enough that populations can be relocated and governments will continue in some form even if the territory of the state vanishes. The human suffering and cultural damage of these changes is not to be ignored. Another issue, one that poses a challenge to conventional ideas of sovereignty, is what happens politically and legally if a state vanishes?

The central issue in a “post-territorial” scenario would be the rights, if any, of the surviving populations and their representatives. The worst-case scenario of total inundation lacks any precedent in international politics. There has never been an instance of a sovereign entity physically disappearing. National borders have frequently been changed and states may vanish as autonomous units, but never as geographic realities. The populations in question exchange citizenship (if not loyalty) and some form of political jurisdiction was perpetuated. Inundation raises the possibility that a nation state would cease as a territorial entity. The population, however, would continue to
exist, most likely as refugees or immigrants.

The political and legal problems that would arise in such a scenario are numerous and speculative. However, there are several issues that can be identified, based on current practice and theory:

1) Population displacement and continued collective identity, if any. If the population of Tuvalu were forced to leave sinking islands, would they retain any collective identity? This has various cultural and ethical implications as discussed. It is also a legal issue. Will displaced populations be recognized as having any collective rights?

2) Diplomatic Issues. All states discussed here have signed treaties, both bilateral and multilateral. They therefore have both treaty rights and obligations. To what extent will those rights and obligations be recognized and supported? To what extent would inundated states be permitted to participate in international bodies, forums and other diplomatic activities as recognized actors?

3) Immunity. The issue of diplomacy also raises the issue of the diplomatic immunity of individuals acting on behalf of inundated states. Are governments and their representatives recognized as diplomatic agents with the immunities traditional given to such agents?

4) Property and assets abroad, and international debt. The status of embassies would be another legal issue, along with control of property and assets in other countries. If a population is dispersed, who controls and enjoys the benefits of property and assets abroad? In the same vein, what is the status of international debts?

5) Claims to former territorial waters, EEZs and the resources therein. Would an inundated state have claims to its former territorial waters or EEZ? Such waters could still have economic value, even after it had ceased to have any inhabitable space. Would small features (islands, rocks, reefs) not capable of habitation but capable
of economic activity be a residual territorial basis of sovereignty?

**Compensation for Victim States**

In either the best or worst case scenarios, what are the alternatives available to SISs? Part of the challenge in this issue is the lack of a precedent. Minor loss of territory due to natural processes does occur, for the Earth is a dynamic system. What makes the changes discussed here different is the alleged human induced cause of global warming. The effects of the change therefore cannot be left to impersonal fate or nature as natural erosion but may be laid at the feet of responsible (and culpable) human agencies. If some states shoulder a greater share of the blame for sea level change, does this make them legally liable? It has been well established in international law that a state that harms another state is liable. To date, such cases have been primarily focused on the laws of war and commercial relations. The principle of state liability also exists for inadvertent harms, such as damage done by off course or reentering space objects. These cases however are based on established customs or treaties; liability or environmental harm is not established.

The responsibility of individual states for global warming is not clearly stated in treaties. The UN Framework Convention on Climate Change (FCCC) struggled with the issue of responsibility (Paterson, 1996: 75). Clearly the developed countries have produced the bulk of greenhouse gases in the past, but are not alone in producing them today. In addition, developing countries wish to expand their own industrial activities and modernize the consumption patterns of their populations. Notions of equity may demand the right of the South to develop, despite environmental costs, as the North has done. At the same time, developed countries are unlikely to accept sole responsibility for the problem and the solution. The compromise, apparent in the FCCC Preamble, assigns the developed countries a greater role in reacting to the problem but not blame or
liability. Indeed, this greater role given to developed countries is premised as much on their greater capacity to act than to their greater share in creating the problem. The Framework Convention identifies “common but differentiated responsibilities and respective capabilities.”10 In international negotiations leading to the Rio and Kyoto agreements, developed countries resisted any specific statement of responsibility. Responsibility for global warming was placed at the door of all states, though not equally. This could be the basis for liability.

However, the legal recourse poses two major problems for effected states. Establishing that certain states have produced atmospheric carbon dioxide is relatively easy. It is clear which state have historically engaged in industrial activity. Establishing a connection between specific states’ pollution, the global warming phenomena, and specific instances of sea-level change is a far more daunting task. To what extent is global warming a human-produced phenomenon? How much, if any, sea-level change can be attributed to global warming or other human activity? Is sea level change in Tuvalu largely due to industrial pollution in the developed countries, to pollution originating in nearby Australia, or to economic activity, agriculture, and other human pressures occurring in Tuvalu itself? These are scientific questions on the surface, but determining the source of responsibility will not be a solely scientific decision. Political considerations will play a bigger part in assigning responsibility.

Scientific research cannot with any certainty establish what portion of global warming is directly caused by human activity, how much is a natural process, and what local effects are driven by human or natural factors. In addition, the scientific community itself is divided and a vocal minority rejects the consensus view. The judgment therefore cannot be based on clear overwhelming scientific evidence.

The second problem facing litigants is the ability of states to opt out of

10 United Nations Framework Convention on Climate Change, Art. 3(1).
international legal proceedings. The US has in the past withdrawn itself from International Court of Justice’s jurisdiction on short notice (issues dealing with Central America in the 1980s). Australia however has accepted the jurisdiction of the Court without reservations and therefore would be vulnerable to suits brought by island states (BBC, 2003).

Should impacted states receive compensation for damages caused by sea level change, it could take one of three forms. The same means could be employed without legal suits, should developed countries decide to act on this issue. The first method would be financial. Polluting states could pay monetary damages to compensate for loss of tourism or fishing revenue, or pay for relocation costs. Should populations be dispersed, monetary payments could be made to individuals. This could be similar in concept to compensation paid by the German and Japanese governments’ victims of atrocities during the Second World War.

A second form of compensation would be technology transfer to affected states. Technology does exist to protect and reverse the affects of coastal erosion. States responsible for greenhouse gas emissions could pay for the restoration or protection of endangered areas (such as barriers against beach erosion or flooding), when those solutions were technologically feasible. Desalination technology could be employed when local water sources are contaminated.

A third form of compensation could be expanded or special migratory rights. Tuvalu has asked both Australia and New Zealand to accept greater numbers of Tuvaluan migrants. While Australia refused, New Zealand, has agreed to accept more Tuvaluan immigrants over a thirty-year period (Kirby, 2001; Panichi, 2001). This approach is would be useful in scenarios were sea level change is minor; it would be essential in an inundation scenario.

However, migratory rights are problematic. While Tuvalu and other SISs generally
have small populations, developed countries have resisted the influx of refugees and other migrants. Developed countries are increasingly inhospitable to refugees, and immigrants, regardless of their status (legal, illegal, refugee and otherwise) are lightning rods for political conflict in many countries of destination, hi such an environment, how do governments deal with a population of 11,000 claiming *environmental* asylum. The question does not end with SISs. Do opportunities granted south Pacific refugees get extended to other, much more populous states? Bangladesh comprises a large, densely concentrated population that is very vulnerable to changes in sea level. Therefore, migratory rights would not be an easy option for the developed countries.

**SOVEREIGNTY WITHOUT TERRITORY**

Stemming from analysis above, I attempt to examine the question posed at the beginning of this paper: does the loss of territory necessarily mean the loss of statehood? The simplest legal outcome would be to regard territory loss as a natural process that changes nothing about international law or practice. The states that have vanished simply cease to be subjects of international law. Without territory above water, with a dispersed population, diplomatic recognition is withdrawn. Embassies would loose their status and the world moves on. This is one scenario in the case of territory loss.

The problem with this scenario is that a legal person does not cease to exist without leaving a legacy, any more than a natural person. The law of successor states is well established, partly in the 1978 *Vienna Convention on the Succession of States in Respect to Treaties*. This treaty sets out in broad terms that successor states are bound by treaties signed by predecessor states (Art. 34). Even though the Soviet Union disintegrated, Russia was recognized as its legal successor state. The other former Soviet

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11 Paterson uses the term “environmental refugees” (1996: 11).
republics were bound to some degree to treaties signed by the USSR before December 1991. The problem is again the connection of the state to territory. The Soviet Union disappeared, the territory did not; it was merely divided up into fifteen new states. A possible answer lies in those entities that do not fully share the attributes of statehood discussed previously. There are three alternative models of sovereignty that are not new to international law or relations and could be used as basis for post-territorial sovereignty.

**Sovereignty with a Territorial Veneer**

Notwithstanding the discussion so far, there are entities in international politics for which the claim of territorial sovereignty is weak. The best know case in the contemporary international system is the anomalous status of Vatican City/The Holy See, recognized by many governments as a sovereign state. The Vatican City State holds sovereignty over 108.7 acres of land within the territory of Italy. While not a member of the United Nations, it does enjoy permanent observer status as a non-member state. Vatican City, with a small territorial fig leaf, exists as a territorial sovereign. However the same entity is also the Holy See, the administrative center of the Roman Catholic Church that does not claims sovereignty based on territory (Damrosch, 2001: 291). Exactly where does sovereignty lie in the case of the Vatican/Holy See? The Permanent Mission to the UN is in the name of the Holy See. Some states recognize the Vatican, others the Holy See. In a sense, the Holy See represents a non-territorial sovereign that claims sovereignty even if it did not control the 108.7 acres and its small population of permanent residents. The Vatican/Holy See therefore represents a possible model of sovereignty which not solely or primarily based on territory.

**Stateless but Sovereign**
The state is not the only actor in which sovereignty could conceivably rest. Medieval authority was dispersed and overlapping and not based solely on territorial jurisdiction. A second possible model of post-territorial sovereignty deconstructs sovereignty and removes it from the state. Sovereignty has considered been an attribute of the state since the end of the Middle Ages in Europe. The Treaty of Westphalia is a widely accepted, if arbitrary benchmark that established the territorial state as free of the authority or influence of any other actor: emperor or pope. In the pre-modern era, sovereignty was vested in many different sorts of actors and conceptualities, which were not necessarily regarded as equals. The sense that the Holy Roman Emperor or the Pope embodied a common sovereignty persisted right up to the Treaty of Westphalia. That Treaty, as Krasner notes, marks a new emphasis “territoriality and the exclusion of external actors from domestic authority structures” (Krasner 1999: 14). Multiple sovereignties operating on the same patch of Earth was soon to fade as a concept. The fiction of equality between sovereignties also became an important factor. Sovereignty as we understand it today is not the first or final word on the concept.

Therefore, sovereignty could be placed in a different entity, such as a population. In a sense it is a major revision of the concept of sovereignty: placing it in human beings rather than a territory. Specific ethnic groups have been given special recognition based on culture, language, or religion. The sovereignty of Native American nations over their internal affairs is one such example. These communities lack all the attributes of sovereignty, but are recognized based on characteristics beyond land. Therefore, this could form a model of legal authority (of some degree) being placed in something other than a recognized state. Applying the concept to a group of people, culturally and linguistically defined and maintaining a legitimately selected leadership. Following the definitions used by Krasner, such a people (or nation) would have Westphalian and
international legal sovereignty but would not have control over a territorial unit and would not have domestic sovereignty (ability to fully regulate its “citizens”). Applied to inundate states, sovereignty based on people would allow displaced people collective rights, even if they resided in the territory of other states.

Gottleib made such a case in *Nations Against State*, in which he proposed a “states plus nations” model to resolve conflicts. Gottlieb’s model would supplement existing state sovereignty with non-territorial national sovereignty. Disputed territories would have dual identity, sundering nationality from citizenship. This would allow an individual to claim cultural identity-based nationality in a group and citizenship protection from an established state (1994: 3, 24). Gottlieb also envisions extensive functional cooperation between states would establish cross-border institutions (1994: 5).

There are no examples in the contemporary international system where sovereignty and diplomatic recognition is granted to a population without territory. There are transnational national groups, without states, but nonetheless maintain a collective identity, the best know example being the Roma (also called Gypsies, though that term is rejected by most Roma). International NGOs claiming to represent the Roma operate to promote Romani culture, language, legal protections, and identity. However, like organizations claiming to recognize other cultural-ethnic groups, the Roma are not regarded as sovereign or recognized as a nation, but as the citizens of their respective states.

**Government in Exile**

The third model, better established in international law, is the government in exile. Here a recognized government continues to operate with its sovereign rights, despite not being in effective control of its territory. Governments in exile operate under the assumption that they have legitimacy, and would exercise sovereignty over territory and
authority over a population.

During the Second World War, several governments in exile were recognized by the Allied powers as the *de jure* governments of occupied states. They participated in international conferences and signed treaties (Damrosch, 2001: 313). The government of Kuwait continued to be recognized by all except Iraq as the legitimate government of the territory of Kuwait throughout the Iraqi occupation. The concept is not limited to wartime situations. US recognition of the three Baltic states continued after the war and continued until those states won *de facto* independence from the USSR in 1991. National liberation movements (like the PLO) are in a sense a variation on the government in exile model, although such movements usually claim to represent a *provisional* government yet to be established.

The difficulty of applying the government in exile concept to inundated states is that the concept is based on an assumption that the condition is temporary. If Tuvalu slips beneath the Pacific, its government will never regain its territory. The “states” claiming government in exile status would exist in a shadowy condition: recognized by some states and continuing to press their claims upon the rest of the world. As only states can bring suits before the International Court of Justice, this would likely be the primary benefit of post-territorial recognition. However, it would not be certain that all states would recognize the government of an inundated state as a government in exile. If such recognition would be used to press for migratory rights or monetary compensation, many governments would be loath to offer recognition.

Ultimately, diplomatic recognition is a political act, and states may in a sense do what they wish (Krasner, 1999: 15). If anarchy is what states make of it; the same argument could be applied to sovereignty. States could recognize a new form of sovereignty that allows the perpetuation of some collective legal rights of displaced populations. Beyond providing legal models for inundated states, these models also offer alternative ways to
conceive of sovereignty. By challenging the link between sovereignty and territory it is possible to see beyond world politics as merely a collection of similar actors, or following Rosenau, a duopoly of sovereignty bound and sovereignty free actors. It is possible to look beyond both sovereignty and the state to a more complex and richer conceptualization of world politics where there are many networks, loci, and types of status shaping individuals, group, and global affairs.

**TENTATIVE CONCLUSION**

In a final irony, although Tuvalu’s request in June 2001 to Australia to allow increased immigration was rejected, Australia asked Tuvalu to accept Middle Eastern refugees it had turned away from its shores (BBC, November 2001). This incident is emblematic of how SISs suffer from the disregard of more powerful states. SISs have little to bargain with except moral principles. Their small size, lack of resources, and limited voice on the world stage erodes their influence. They have no strong economic or resource-based clout to use against anyone. As sea level change is an arcane subject with irregular political resonance, many other issues more closely tied to security and prosperity will crowd it off the agenda.

The cost of sea level change may very well be narrowly born by SISs, at least at first. The broader significance of sea-level change will not fully understood until the model of major climate change becomes either the scientific or political consensus. Until then, this issue must compete for attention with many other, potentially more important issues. The former may not occur until the affects have become significant or produce; direct costs for states. Until that time, the question of sovereignty remains open.

As a SIS, Taiwan cannot ignore this issue, Tuvalu and other SIS now face the threat of total obliteration, and this may not be much different from the fate Taiwan
might face in a few decades, especially outer isles of Taiwan. Moreover, Taiwan should also seek membership in the Alliance of Small Island States, so that this can serve as a platform for it to provide technology and expand the scope of ecological diplomacy with other small island states. Nine members of the alliance, almost half the total membership, already have diplomatic ties with Taiwan.

Once established within this organization, Taiwan would be able to become an effective example for member islands on the issues of the environment and development, rather than just serving as cannon fodder in the confrontation between major powers in the Asia Pacific. Only by redefining Taiwan’s status in geopolitics can we break out from our current diplomatic difficulties. If Taiwan continues to ignore the difficulties of other SISs, this island might be also one of the SISs to disappear beneath the Pacific Ocean.
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Title: Growing from A(ssociate) to B(achelors) on Maui

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Keywords: community college baccalaureate degree, applied business and information technology, island economy, education, 4-year degree, bachelor’s of applied science, bachelor’s degree.

Abstract:
This year, Maui Community College | University of Hawai`i System offered its new four-year baccalaureate degree: Applied Business and Information Technology (ABIT). At the same time the conferring of baccalaureate degrees by community colleges “…has become a ‘hot’ and controversial topic, not only among community college and university leaders, but also among policy makers, business leaders and students concerned with issues of access, cost and the structure and purposes of post-secondary education.”

Census data show dramatic increases in adult educational attainment in the United States during the last half of the 20th century. In order to compete successfully in the worldwide marketplace, island business people and their employees need to be educated in the latest business concepts and information technology. Maui County has both a growing population and many prospective four-year students who either cannot or would rather not leave their home islands. Surveys of local residents show a demand for Maui Community College’s new baccalaureate degree.

Planning and implementation steps for the new degree include:
authorization
funding
organization
housing
curriculum
articulation
marketing and recruitment
accreditation
faculty
  o research
Issues requiring attention include:
  political and cultural considerations
    change of name
    maintaining both the community college mission and baccalaureate degree(s)
Growing from A(ssociate) to B(achelors) on Maui

Authors: M. Christensen and D. Grooms

1. Introduction.

This year, Maui Community College (MCC), a part of the University of Hawai`i (UH) System, offered its new four-year Bachelor of Applied Science degree: Applied Business and Information Technology (ABIT). The conferring of baccalaureate degrees by community colleges “…has become a ‘hot’ and controversial topic, not only among community college and university leaders, but also among policy makers, business leaders and students concerned with issues of access, cost and the structure and purposes of post-secondary education.” (Floyd, et al., 2006) This paper will describe the case of a baccalaureate degree being offered at MCC and will discuss some controversial issues involved.

2. The need for a Bachelor’s degree.

Census data (U.S. Census Bureau, 2006) show dramatic increases in adult educational attainment in the United States during the last half of the 20th century.
In order to compete successfully in the world-wide marketplace, island business people and their employees need to be educated in the latest business concepts and information technology.
Maui County has both a growing population and many prospective four-year students who either cannot or would rather not leave their home islands.

**Maui County**

**POPULATION GROWTH (CensusScope, 2006)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Population</th>
<th>Change</th>
<th>Percent Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1960</td>
<td>42,576</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1970</td>
<td>45,984</td>
<td>3,408</td>
<td>8.00%</td>
</tr>
<tr>
<td>1980</td>
<td>70,847</td>
<td>24,863</td>
<td>54.07%</td>
</tr>
<tr>
<td>1990</td>
<td>100,374</td>
<td>29,527</td>
<td>41.68%</td>
</tr>
<tr>
<td>2000</td>
<td>128,094</td>
<td>27,720</td>
<td>27.62%</td>
</tr>
</tbody>
</table>

*Source: Census 2000* analyzed by the *Social Science Data Analysis Network (SSDAN).*

3. Other community college baccalaureate efforts.

In July 2004, the American Association of State Colleges and Universities (AASCU, 2004) noted that

“…eleven states had approved at least one two-year-college baccalaureate and effort was under way in at least three more states.”

In Canada (Skolnik et al., 2005),

“By the year 2003, governments in three of Canada’s four largest provinces had authorized community colleges to offer the baccalaureate degree. All told, more than a quarter of Canada’s community colleges now offer at least one baccalaureate program, and that proportion will likely rise to almost two in five within the next year.”

They noted that

“The community college baccalaureate has developed in response to increased demands for higher education, combined with cost and capacity concerns.”

At the same time, they sounded a warning:

“At a minimum, this new role for community colleges raises questions about the fundamental missions of two- and four-year institutions, and about the meaning of the baccalaureate degree. In addition, to the extent that it expands to more degrees, institutions, and states, this trend challenges the somewhat precarious balance between the two sectors—to alter the flow of state support and students.”
4. Models of community college bachelor’s degrees.
Deborah L. Floyd (Floyd, 2005) has identified four different models of community college baccalaureate degrees:

The articulation model – whereby articulation agreements ensure acceptance of freshman and sophomore credits by senior colleges and universities;

The university center model – where a university confers the degree in partnership with other colleges and junior colleges. Under this model, colleges and universities commonly share the use of facilities on or near community college campuses for delivery of upper division courses and programs;

The university extension model – colleges use their university affiliation although they have independent accreditation. In this model, the campus where the courses are offered is formally part of the university;

The community college baccalaureate – the community colleges confer the baccalaureate, not just partner with others for baccalaureate programming. There is some debate about what to call such an institution which still offers associate degrees.

5. Early steps on Maui.
Professor B. K. Griesemer, an early faculty proponent of offering a baccalaureate degree at MCC, remembers strong community support as far back as the 1980’s when members of her community advisory boards for her associate degree in business said that they would offer no salary increase to employees for a two-year degree (Griesemer, 2006). They preferred graduates with a four-year degree.
In response to growing demand for baccalaureate degrees within the UH System, the University of Hawai‘i, Hilo, on the Island of Hawai‘i, was authorized by the UH Board of Regents to offer baccalaureate and advanced degrees on site, and the University of Hawai‘i, West Oahu was authorized to offer junior and senior level classes as a capstone for Leeward Community College students. UH West Oahu now offers advanced degrees.

Following the “university extension model,” the “University of Hawai‘i Center, Maui,” http://www.umaui.net/, was formed to offer baccalaureate and master’s degrees to Maui County students primarily via distance education from the University System campuses at Manoa, West Oahu, and Hilo. To date, over 200 students from Maui County have received such degrees.

However, the university extension model is not perfect. Scheduling distance courses for students in the local environment is not as convenient scheduling courses on site. Also some students prefer and/or learn better in a face-to-face environment where instructors are available for help on an informal, collegial basis. The impracticality of sending professors to reside on remote campuses has made that an unlikely alternative. Lastly, the technology and personnel required to deliver distance courses via interactive television is expensive.

In the early 1990’s, a number of Maui Community College (MCC) faculty and administrators, including Professor B.K. Griesemer and then Provost Clyde
Sakamoto, began to dream of offering a four-year bachelor’s degree at MCC to be taught by MCC faculty. Interest in community college baccalaureate degrees continued throughout the remainder of the decade. In addition, several new buildings and state-of-the-art facilities were built, anticipating MCC future growth. In August 2001, Provost Sakamoto was appointed by UH President Evan Dobelle to chair a commission considering four year degrees throughout the UH System. In support of the specific development of the ABIT and other similar programs, President Dobelle committed $500,000 to Project 2 + 4. Maui Community College received support for its Provost to be assigned to direct Project 2 + 4 for the UH Community College System, the appointment of an acting provost, and acting dean of instruction, faculty curricular and program development support, resources for baccalaureate faculty appointments, student services and library resources, travel, and other baccalaureate start-up requirements.

Following a needs assessment report for a baccalaureate degree completed in December 2001, in 2002, surveys (Maui Community College, 2002) were mailed to all Maui County residents to ascertain the interest and support of the Maui County community for four-year degrees and for which kinds of degrees. The top choice among survey respondents was for a degree in computer science, and the second choice was for a degree in business. As for employability, 97.7% of employers on the survey described themselves as “highly likely” or “likely” to hire a Maui Community College / University of Hawai`i graduate.
In an effort to minimize duplication within the UH System, MCC faculty and administration decided to combine the two interests into one degree that blends business and information technology: a Bachelor of Applied Science (BAS) in “Applied Business and Information Technology” (ABIT).

During spring 2002 MCC’s Academic Senate endorsed ABIT as the college’s first baccalaureate degree and, in summer of 2002, a committee of MCC faculty and administration completed an Authorization to Plan Academic Program (Griesemer, Grooms, and Kruse, 2002) outlining the scope of the program, its curriculum, and the financial needs. The plan was unanimously approved by the Board of Regents in the fall of 2002. After approval from the Board of Regents was secured, in December 2002, the ACCJC granted permission for MCC to initiate a single baccalaureate degree and to seek joint accreditation by the WASC junior and senior accreditation bodies (ACCJC and ACSCU).

6. Planning and implementation of the ABIT four year degree at MCC.

Planning and implementation steps for the new degree include:

authorization
accreditation
funding
faculty
  o research
  o workload
  o salaries
organization
curriculum
articulation
marketing and recruitment
academic support services
computing services
library resources
student support services
admissions
financial aid
advising
housing
community support
advisory boards
mentoring
internships.

The simplified timeline in Appendix A summarizes the history of the ABIT planning process from its inception in 2001. These documents are available for review at http://maui.hawaii.edu/abit/welcome.html. The timeline also includes the plans through spring 2008 when initial accreditation of the program is expected.

6.1 Funding. To address resource requirements beyond the support provided by tuition fees and Project 2 + 4 resources, monies from the U.S. Department of Labor Rural Development Project/Rural Job Training Initiatives (RDP/RJTI) was secured to specifically support the ABIT degree and strengthen the community college infrastructure. The overall purpose and priority criterion of this Rural Development Project is to create sustainable strategies, programs and infrastructure that will continue beyond the life of the federal grant. Two new faculty members with PhD’s in business and in computer science were hired to develop curriculum, to help in planning and accreditation, and to offer selected courses. These two positions were converted to full-time tenure-track positions beginning in August 2005. A third tenured-track ABIT faculty position was also approved in the area of general education and should be filled by August 2006.
6.2. Community advisory board. A community advisory board was formed to help provide direction as the program develops. In addition, it is hoped that they can mentor students and facilitate internships for them. A number of entering students are currently employed at the Maui High Performance Computing Center.

6.3. Accreditation. A team comprised of Western Association of Schools and Colleges junior and senior section members visited the MCC in spring of 2005 to review the ABIT program for Candidacy or Initial Accreditation. As a result of a report submitted to the commission by the team, MCC was recognized as a Candidate for Accreditation in June 2005 by ACSCU commission of WASC, 985 Atlantic Avenue #100, Alameda, CA 94501, 510.748-9001. This status is a preliminary affiliation with the commission awarded for a maximum period of four years. Candidacy is an indication that the intuition is progressing toward Accreditation. Candidacy is not Accreditation and does not ensure eventual Accreditation. This permitted the college to begin to market and offer the degree.

Accreditation has been complicated by the fact that two separate accrediting bodies of the Western Association of Schools and Colleges (WASC) are jointly reviewing the ABIT program as a single baccalaureate. As an institution, MCC is accredited through The Accrediting Commission for Community and Junior Colleges (ACCJC), while four-year colleges, and the ABIT program, accreditation falls under (The Accrediting Commission for Senior Colleges and Universities (ACSCU). MCC would like to keep its accreditation with the ACCJC; however, MCC has been advised by both the ACCJC and
ACSCU that if MCC wishes to offer additional baccalaureate degrees beyond ABIT, the college must be accredited by the senior WASC commission.

Dealing with a college in transition, and one that plans to keep its two year degrees, requires procedures that are currently under review by the ACCJC and the ACSCU. Experience with MCC may form a model for future developments within the WASC accreditation scope. (Furthermore, inconveniently for MCC, ACCJC put the UH System on warning for not meeting some of its requirements, including system level organization, and some community college assessment issues (not relating to MCC). That warning has since been lifted.)

A joint junior and senior WASC commission team will visit MCC in fall of 2006 to evaluate the status of the ABIT program. Only the senior member will evaluate ABIT. The ACCJC team will be looking at the community college accreditation. It is anticipated that MCC will apply to senior WASC for “Initial Accreditation,” after a site visit scheduled during fall 2007 to be followed by a team report to the senior commission for its February 2008 meeting. It is anticipated the ABIT program will be granted initial accreditation at this meeting.

6.4. Curriculum development. Curriculum development was heavily influenced by WASC junior and an emphasis was placed on learning outcomes at both the course and program levels. Faculty and administrators have aimed for a program that will provide students with skills and knowledge to enter careers in business and information
technology prepared to respond to continuous change and challenge; and to serve the community as responsible citizens. To accomplish this, the curriculum was thoroughly vetted with the ABIT Committee, Department and Curriculum Committees, and the Academic Senate. In addition, MCC faculty had conversations with three baccalaureate campuses, UH Manoa, UH Hilo, and UH West O‘ahu, during the development of the ABIT curriculum. Such system- and campus-wide cooperation contributed to the delivery of the ABIT program, as well as providing continuing guidance in curriculum development and even offering occasional courses from other UH campus faculty at MCC.

Effective assessment is used to validate the quality of the ABIT program through internal validation (are we doing what we think we’re doing?) and external validation (are we doing what we should be doing?) to identify areas that need improvement. MCC’s program review process involves continuous and systematic evaluations of all established programs utilizing Program Review Teams that also serve to support and guide programs as they move towards continuous improvement. The review process follows a rigid review schedule and culminates with a written report by the Chancellor to the President of the University. An important part of this process is the timely feedback that is passed back to the program coordinator during each phase of the review.

6.5. Organization. Curriculum was also influenced by organization. All current faculty are appointed through the “Business and Hospitality” Department, not through “Science, Technology, Engineering and Mathematics”.
Twenty four credits of years three and four of a student’s program are in business subjects and 15 are in information technology. Twelve credits are in general education/liberal arts. Six credits are of upper level electives in either business or information technology, and 6 credits are in the blended ABIT Capstone course. See page 17 of the college catalog at http://www.maui.hawaii.edu/academics/catalog/Pages009_46_2005.pdf

At the lower division level the program curriculum is distinguished by its required foundation courses in business information technology, as well as a strong general education component including courses in communication, quantitative reasoning, humanities, social and natural sciences. The curriculum at the upper division level includes a solid core foundation of business and information technology that builds on the lower division education and the continuation of a strong general education foundation with discipline-focused courses in communication, conflict resolution, and ethics. Additional credit requirement include specialization courses that build on earlier studies and round out the requirements. The program culminates during the senior year with a capstone experience that will provide students an opportunity to integrate previous course work. Details of the ABIT curriculum are found in College Catalog, page 17, at http://www.maui.hawaii.edu/academics/catalog/Pages009_46_2005.pdf.

6.6. Articulation. Curriculum has also been influenced by articulation. Faculty have planned courses with standard content that could be recognized and transferred to other
schools. A problem within the UH System exists in that UH Manoa and Hilo business schools policies are to accept only courses from schools accredited by “AACSB,” which makes direct transfer to these institutions difficult. In current practice it may be easier for a student to transfer to a mainland college than within the UH system.

6.7. Faculty workload. Accreditation issues have also influenced faculty workload. The two new ABIT faculty members with PhD’s are appointed at the community college, but instead of the 5-4 community college standard course load, they are assigned a 4-3 course load with the addition of a component of “applied research.” ABIT faculty members are paid at the community college level. WASC Senior recommended that faculty and administration read “Scholarship Reconsidered” (Boyer, 1990) to better understand the wide range of applied research.

One faculty member has begun an entrepreneurial Information Technology Center (IT Center), initially asking whether MCC and its students can be agents for the advancement of information technology for the island. Contracts are accepted for commercial IT work, to be done by students and/or staff under faculty supervision. Students are paid and gain real-world experience and portfolios, and the community gains expertise. Having such expertise available on the island invites new or expanding business.

Another ABIT faculty member is investigating cultural influences in the establishment of businesses in Maui County. Using the case study methodology, he is studying ethnic entrepreneurship in the Hawaiian Islands, in particular the field of entrepreneurial
It is hoped that the study will shed light on ethnic entrepreneurship and the role of formal institutions in the development and growth of such entrepreneurial vectors.

6.8. Marketing. Marketing for ABIT and for MCC as a whole has been influenced by a desire to reach international and out-of-state students as well as residents of Hawaii. Tuition for Hawaii residents is very low: $49 per credit or $1,479 for a full year of 30 lower division credits. Out-of-state students pay a substantially higher tuition: $242 per credit or $7,260 for a full year of 30 lower division credits. With excellent new facilities at MCC, plus the fact that the island of Maui is recognized internationally as an attractive destination, it makes “cents” that adding more out-of-state and international students to the college population will increase revenue as well as add cultural diversity to the students’ educational experience.

Initially, the two new faculty pitched in: one faculty member revamped the MCC website; another wrote a marketing plan, visited college fairs on the East Coast of the U.S., and stayed active with international recruiting. A delegation of MCC administration and Spanish faculty visited prospective students in South America. In fall of 2005 a counselor was hired for the ABIT program. She has counseled initial ABIT students, held numerous informational sessions for local students both at MCC and local high schools, and visited college fairs along the West Coast of the U.S. Advertisements have been placed in selected publications.

6.9. Housing. More housing will be needed for increasing numbers of out-of-state and international students. Student housing is currently under construction in the private
sector for MCC students. It is expected that space for an additional 100 students will be completed for fall 2006, with a total new capacity upon completion for 400 students.

6.10. Campus services. More student services will be required as more students enter and as more reside in student housing. Increases in international students will bring special issues needing attention. A faculty committee is currently considering those issues. Accreditation for a four-year degree will require increased library support. New upper level courses in information technology and e-commerce require hardware and software previously not available on the MCC campus. Where can the expertise be found to configure and to maintain it? Is it a good use of PhD faculty time to allocate their resources to doing it? Admissions of international students will take increasingly more time and expertise in transcript evaluation. Counselors will be called upon to answer more and different questions. Financial aid is important to allow students time to work on their studies. Fortunately the community (Maui Land and Pineapple Co., Textron Systems) has already supported the program with several scholarships. Eight students are currently supported with scholarships of $3,500.00 per year each.

7. A dynamic time of change.

It is a very large change for a community college to offer a baccalaureate degree, far greater change than the addition of another degree in a four-year college. MCC is fortunate to enjoy strong community support both for its two-year programs and for a four-year program.
7.1. *Faculty concerns*. Some faculty have expressed concerns: If a baccalaureate degree is successful, will it take away resources used in other programs? Will it overwhelm campus services? Will a baccalaureate offering be of high quality? Will existing faculty without PhD’s have any role remaining for them? Of course, if the baccalaureate degree is successful and brings in out-of-state and international students, there will be increased revenue to benefit the whole campus. In addition, there will be a richer selection of courses available, students engaged in studying at higher levels, and faculty who are engaged in research, all enriching the educational community on this small island. And, most importantly, Maui county residents will not have to leave home to obtain a bachelor’s degree, their passport to higher pay.

MCC intends to continue its two-year programs, and to continue its policy of open admissions. One of the open questions for all colleges involved in community college baccalaureate degrees is how to maintain both the community college mission and the baccalaureate degree. See section 7.3 below.

7.2 *Change of name*. There is discussion about changing the name of Maui Community College. Its current name is much loved, and fits its previous educational model. However, to most people “community college” implies a two-year college, not a college that offers baccalaureate degree(s). Is it misleading to keep the community college name? Regardless, it is difficult to market a four-year degree from an institution with a community college name to an international and out-of-state population.
7.3. Maintaining both the community college mission and baccalaureate degree(s)

Consider the MCC mission statement:

Maui Community College is a learning-centered institution that provides affordable, high quality credit and non-credit educational opportunities to a diverse community of lifelong learners.

Also consider the MCC vision statement:

We envision a world-class college that meets current and emerging Maui County education and training needs through innovative, high quality programs offered in stimulating learning environments.

The College mission, goals, and actions will be guided by the Native Hawaiian reverence for the ahupua’a, a practice of sustaining and sharing diverse but finite resources for the benefit of all.

The difference between those two paragraphs shows that change is envisioned.

When offering open admissions to beginning students, the college must support growth for those students. Instruction in a classroom with students of the wide ability levels that result from open admissions must be different from instruction in a more homogeneous classroom of a selective school. However, the ABIT program, beginning in the junior year, has an admissions process with specific admission requirements. Some students will complete two-year degrees and still not qualify for ABIT, i.e., there is a “jumping off” point for students, for example, the “Business Careers, Option 3” degree at MCC.

8. Summary.
MCC is growing from an associate to a bachelor’s institution. Strong community support is helping it along. Both the university extension model and now the community college baccalaureate model are being used as described. In the end, much will be learned about this growth process. County residents will be offered on-site bachelor’s degrees without their having to leave their home county, and the islands will have a more highly educated work force, inviting businesses to sustain the county’s economy.
REFERENCES


Moloka`i’s Visioning Process

The Molokai Enterprise Community process began in 1998 with Moloka`i residents providing hundreds of volunteers hours in community visioning and planning meetings. The result of this community based planning effort was a 10 year strategic plan that captured the community’s dreams and aspirations for Moloka`i’s future. The community’s shared vision and united effort was recognized and honored as a U.S. Department of Agriculture rural Enterprise Community as part of the federal government’s Empowerment Zone and Enterprise Community Program.

Ke Aupuni Lokahi (KAL), a non profit entity made up of community volunteers, was tasked with working with the community to implement the 10 year Moloka`i Enterprise Community Plan. KAL’s core purpose is to help Moloka`i residents empower themselves to implement their community strategic plan and, thereby, control their own destiny.

As a result of a broad based community planning process, a long developing vision of Moloka`i residents was articulated in the Moloka`i Enterprise Community Strategic Plan:

“Moloka`i is the last Hawaiian island. We who live here choose not to be strangers in our own land. The values of aloha `aina and malama `aina (love and care for the land) guide our stewardship of Moloka`i’s natural resources, which nourish our families both physically and spiritually. We live by our kupuna’s (elders’) historic legacy of pule o`o (powerful prayer). We honor our island’s Hawaiian cultural heritage, no matter what our ethnicity, and that culture is practiced in our everyday lives. Our true wealth is measured by the extent of our generosity.

- We envision strong `ohana (families) who steadfastly preserve, protect, and perpetuate these core Hawaiian values.
- We envision a wise and caring community that takes pride in its resourcefulness, self-sufficiency and resiliency, and is firmly in charge of Moloka`i’s resources and destiny.
- We envision a Moloka`i that leaves for its children a visible legacy: an island momona (abundant) with natural and cultural resources, people who kokua (help) and look after one another, and a community that strives to build an even better future on the pa`a (firm) foundation left to us by those whose iwi (bones) guard our land.”

This vision underscores the core values and principles that guide Ke Aupuni Lokahi as it implements the 10 year strategic plan laid out by the Moloka`i community. At its strategic planning retreat in February of 2004, KAL’s board affirmed these values and emphasized the following as core to its work:

- Sustain Moloka`i’s unique rural lifestyle.
• Use Native Hawaiian culture as the foundation of Moloka‘i’s economic base.
• Practice the principles of stewardship to protect and sustain the island’s resources for generations to come.
• Practice community driven and community-based economic development to strengthen Moloka‘i’s capacity for self-governance and self-determination.

Ke Aupuni Lokahi believes that, by holding true to these principles, it will be able to achieve its primary purpose of empowering the Moloka‘i community to control its own destiny.

When the Enterprise Community (EC) process began in 1998, the economic numbers for the island of Moloka‘i were in many cases the worst in the state – with the poverty rate around 25 percent and nearly the same percentage of food stamp recipients. There were limited opportunities for high-school graduates and, as a result, many young people were forced to leave the island. At the time, the average annual unemployment rate hovered around 16 percent.

In order to identify viable strategies for community action to address these issues, the community organized itself and involved residents in hundreds of planning meetings in 1998 that resulted in the development of a 10 year strategic plan for the island of Moloka‘i. The plan lays out strategies and specific initiatives in the areas of:

• environmental protection,
• economic development,
• housing development,
• education, and
• health and human services.

The more than forty initiatives being developed by the community are intended to achieve community development that is compatible with the rural lifestyle of Moloka‘i. As KAL moves into its final years of its Enterprise Community designation, concerns for creating meaningful economic and employment opportunities for Moloka‘i residents looms even larger for the community than it has in the past. As a result, KAL’s Board of Directors has identified the following as priority programmatic strategies:

• create an economic base that –
  | maintains Moloka‘i’s preferred lifestyle,
  | builds on Native Hawaiian culture as a foundation,
  | protects Moloka‘i’s natural resources for future generations through the incorporation of stewardship principles, and
  | generates new businesses and jobs that generate viable economic opportunities for local residents;
• establish sustainable development for continuous improvement of the economy where Native Hawaiian culture and values provide the resource base and evaluative framework for viable community-based economic development strategies and projects that nurture Native Hawaiian cultural development;
Climate change, identity and ecocolonialism in Tuvalu

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ABSTRACT
Responding to the threat of climate change on low-lying atolls involves pondering an uncertain future. Just as meanings and experience shape understandings of island space in the present, people construct individual and shared imaginings of life in the future both on and off island as they begin to negotiate climate-change related alterations in the physical fabric of islands and the discourses that attend them. In a series of semi-structured conversations I held with members of the population resident in Tuvalu’s capital, Funafuti, participants revealed that they are interpreting the issue of climate change in terms of potential effects on Tuvaluan cultural heritage. The continuation of polluting activities that contribute to climate change signify to inhabitants of Tuvalu a certain tension – on the one hand, between the development priorities of the industrialised world, and on the other, a disregard there for the right of Tuvaluans far away to assert and practice Tuvaluan identity. These views, spoken to me as a citizen of an industrialised country, are strategic in the sense that they represent an appeal to people in the industrialised world to reflect on our practices that contribute to climate change in a particular way: as instruments of ecocolonialism.

KEY WORDS
Tuvalu, climate change, ecocolonialism, ethics, identity

In late January 2006, Funafuti atoll experienced a spring tide, one of the highest of the year. At their peak, these tides cause localised flooding on certain parts of the atoll, covering some roads and sections of private land until they are knee-deep in sea water.

A handful of foreign journalists interested in pursuing stories about the impacts of climate change were on Funafuti at that time. I had recently arrived there for a stay of several months. The purpose of my visit was to continue my doctoral research on Tuvalu as a space of climate change that I had commenced the previous year. I knew that the spring tides had attracted many journalists before, and had timed my second stay to enable observation of the flooding events in January, February and March.

One of the foreign journalists, Nick1, was an employee of a broadcasting network that had a philosophy geared towards quality programming. He was working on a piece for a current affairs program that promised in-depth coverage of important national issues. Nick was staying on Funafuti for four days. We had arrived on the same flight, where we had met and

1 It is my intention to de-identify participants, so I make use of pseudonyms throughout this paper. I agree with Besnier (2000, 4) that achieving complete anonymity in a small community is difficult, but that the use of pseudonyms and other identity-blurring devices can nevertheless establish distance between academic writing and the people and events it depicts.
informally discussed our respective projects. Nick’s interest in Tuvalu’s climate change imperatives was pitched at the international level. He was concerned with issues facing the international community in general, and the nation from which he came from in particular, if the islands of Tuvalu were to become uninhabitable. He was especially interested in the issue of migration.

On the second morning of his stay, we met again and I asked him how his work was progressing. He replied that he was pleased, having conducted several interviews and captured on film some good images of Funafuti. However, he still wanted to interview on camera an individual who was planning to emigrate from Tuvalu. Knowing that I had spoken to many people about climate change issues on my previous visit, he asked me if I knew anyone with emigration plans. During many informal conversations and almost forty information gathering and semi-structured interviews several months earlier, I had only met two people who expressed a definite desire to build a future elsewhere and explicitly linked this desire to a fear about the impacts of climate change. By the time I returned, they had both left the country. One was a student who was continuing his studies abroad. The other person was not Tuvaluan but had a Tuvaluan spouse. They had left when an employment opportunity had arisen in another country. There had been a few others, certainly a small minority, who were considering emigrating abroad, or who thought they might decide to emigrate at some point in the future. Only one of these had started the application process for migrating to New Zealand, but her mind was not fully made up. She was also thinking about committing herself to staying in Tuvalu for some time by taking on a new leadership role there.

On the previous day, however, I had met with a girl, Mili, who I had become friendly with during my earlier visit. While we were catching up, Mili had asked me if I knew anything about how a Tuvaluan might go about applying for permanent residency in Australia, as she wanted to move there with her husband and their children. The family had spent time in an Australian city in the past for education purposes, and had been very happy there. On returning to Tuvalu, they had experienced tensions within their extended family group, and Mili believed that her nuclear family unit would be stronger if they lived away from the extended family household. I told Nick that I knew one person who was thinking about emigrating abroad, although I specified that the reasons were not, as far as I knew, related to climate change. However, if he was interested in talking to her, I would ask her if she would consider being interviewed on the topic of emigration for a documentary. Mili was hesitant at first but then decided she would participate.

Nick started to set up his camera in Mili’s home, ready for the interview. At that stage, Mili changed her mind and opted out. She suggested that Fuli, another member of her household, might be willing to be interviewed. As it turned out, she agreed. I did not know Fuli as she had been abroad during my earlier visit. Fuli had a quietly confident demeanour and seemed not to share Mili’s embarrassment at the prospect of being filmed. I noticed that Nick did not question Fuli about her thoughts on emigration before he agreed to the participant swap. Indeed, he started the camera rolling almost immediately, just pausing to explain who he was and why he was in the country. His first question to Fuli was ‘Why do you want to leave Tuvalu’? Immediately, Fuli’s confidence vanished. She became flustered, giggling nervously and stammered ‘I don’t know…..because of the sea rising?’ Nick tried to get her to relax in front of the camera, chattily asking her to describe her fears concerning climate change and to think about why she wanted to emigrate. Again she stumbled and spoke nervously about an uncertain future in Tuvalu. Eventually when the camera was turned off, Fuli’s confident demeanour returned immediately. Clearly relieved that the interview was over, Fuli said, ‘Actually, I don’t want to leave Tuvalu. I am just cautious about the future’.

INTRODUCTION
In this incident, concepts of migration and rootedness are manipulated in an interplay of imposed and subjective islander identities. As Tuvalu has become an iconographic islandscape in climate change debate, popularly imagined as a contemporary Atlantis, Tuvaluans, and other low-lying island dwellers are regularly being imagined as future displaced peoples. Recent work in cultural geography has shown how place-based identities can be used strategically by marginalised peoples (Perreault 2001; Gombay 2005). For the inhabitants of Tuvalu, long considered to be a colonial ‘backwater’ (Howlett 1985, 2), the identity of future displacement can be a powerful one. It is useful for mobilising academic and institutional resources aimed at preventing off-island migration and mitigating and/or adapting to climate change impacts in place. In this paper my aim is to highlight the ethical responsibilities I face as an ‘outside’ researcher producing representations of strategic identity construction.

What does the incident I related at the beginning illustrate about the ways in which identities are built strategically? Initially, what struck me most about it was how identities in Tuvalu in the context of climate change are easily manipulated to fulfil ideals of newsworthiness set by the international media and the media consuming public. For Nick, who keenly desired to capture either Mili or Fuli on camera uttering three ‘short sharp sentences’ about Tuvalu, migration and climate change, the motivations and even the intentions of the two women towards emigration were almost irrelevant. By employing a combination of leading questions and careful editing, Nick was hoping to dramatise and exaggerate the idea of migration, at the same time downplaying Fuli’s complex feelings of rootedness.

The incident also highlighted my own role in the construction of another’s identity. It was partly at my suggestion that the encounter between Nick, Mili and Fuli occurred in the first place. In my role as a researcher I had been exploring how climate change issues are linked to place-based identity in a context.

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2 In my doctoral research, of which this paper reports a portion, I am concerned with critically analysing changing Tuvaluan identities in the context of climate change and other social, economic, environmental and cultural challenges and opportunities.

3 I use the term ‘islandscape’ in preference to ‘landscape’ to invoke the bounded land/sea interface that distinguishes islands from ‘coastsces’ and other landscapes.

4 Low-lying areas of other countries, such as Bangladesh, are imagined in similar ways.
series of semi-structured interviews with government officials, community leaders, pastors, members of parliament, employees of non-government organisations, youth representatives, academics, journalists, consultants and students. Most of these were resident on Funafuti and were Tuvaluan citizens. Others were linked to Tuvalu through their professional activities. My actions and identities were necessarily becoming part of the identity-building processes I was attempting to critique.

STRATEGIC IDENTITIES

Although at times highly contested (for example, Eschenbach 2004), visions of ‘disappearing islands’ have become part of the common currency of climate change discourse. The Intergovernmental Panel on Climate Change (IPCC) has stated:

In tiny islands where physical space is already very scarce, adaptation measures such as retreat to higher ground and use of building set-backs appear to have little practical utility. In extreme circumstances, sea-level rise and its associated consequences could trigger abandonment and significant “off-island migration,” at great economic and social costs (IPCC 2001, 856).

Tuvalu’s leaders have vigorously championed their country’s plight in international political arenas. For example, in an address to the World Summit on Sustainable Development in 2002, Honourable Saufatu Sopoanga, a former Prime Minister of Tuvalu, declared:

We want the islands of Tuvalu, our nation, to exist permanently forever and not to be submerged underwater merely due to the selfishness and greed of the industrialised world.

The following extracts are drawn from my interviews. They link climate change with threats to territory and Tuvaluan identity in a way that is similar to the Prime Ministerial statement above:

Relocation of the people due to the problem of sea level rise does not remove the existence of Tuvaluans from the face of the earth but it removes their identity as Tuvaluans. And their identity as Tuvaluans has its core in its culture….I hate to visualise the day that people have to leave. Because for myself I am one of the Tuvaluans who do not opt for relocation. I would rather be the last person on this piece of land, before it sinks (Church leader).
Every moment I treasure because I know that my great great grand daughter will not be able to live through what I am living through, not be able to enjoy life in Tuvalu as I am enjoying it. Maybe she...will be hearing lots about Tuvalu, but seeing what it is like, getting a real feel for who he or she is as a Tuvaluan, she wouldn’t have that opportunity. And it's an identity being robbed from her (NGO leader).

How will our children cope with living in Australia say for instance? Or living in New Zealand? How will they adapt? Will they still retain their Tuvaluan identities, or will the pressure from other communities that they are living with force them to abandon and adapt more to the environment that they are living in? (Government official).

Though we say we are going under water and people are looking to go somewhere else, there’s no better place than home. The main reason is you know your way at home. And then you are yourself. Your identity is there (Government official).

There is no other place like Tuvalu. If Australia or New Zealand want us to move down there, I think there is no such place as Tuvalu you know, if we go there, as refugees. I think Tuvalu is the best place for Tuvaluan people (Government official).

Tuvaluans do not want to lose their identity. They don’t want their islands to only exist in stories about a place that used to be (Youth representative).

I don’t want to leave my country. Because this is a sovereign state, we have sovereignty, and we want to maintain that. We also don’t want to burden other countries with us, to relocate us to other countries, to burden them because we have our own culture and we want to maintain that. I will be very sad and I am sure that I think I will be, if the worst comes to the worst, I think I would rather just stay here and die. I don’t want to leave my country (NGO leader).

Clearly, the threat of climate change’s physical impacts on the islands of Tuvalu is being interpreted as a threat to Tuvaluan culture and identity. In one part of my interview, I had asked participants to reflect on the most important things about Tuvalu. In response, participants almost always mentioned peace and community solidarity. This idealised community vision was tempered somewhat by a perceived increasingly problematic conflict between ‘traditional’ and ‘imported’ values, a distinction that also serves to demarcate the line between who is an ‘insider’ and who is an ‘outsider’ in Tuvalu (see also Goldsmith 1985). When I asked participants to reflect on what Tuvalu would seem like to outsiders, the safety of the society and the friendliness of the people were paramount themes.

There can be little doubt that my own position as an ‘outsider’ was an important factor in the way these interviews unfolded. An anthropologist who has spent a great deal of time as an ‘outsider’ on the island of Nukulaelae in Tuvalu has observed processes of strategic identity building among the Nukulaelae community:
I gradually came to understand that the cover story of the community as an exemplar of harmony and unity was a powerful ideological construct that Nukulaelae Islanders have perfected *over a century and a half of interaction with the outside world* (Besnier 2000, my emphasis).

Besnier, not uncritically, goes on to suggest that this type of strategic identity building has also occurred in the context of the larger Tuvaluan community. In historical records, he finds evidence that an idealised image of Tuvaluan society has been employed in interactions with outsiders, in which harmony, communitarian values and consensus are central. This image was of fundamental importance during the British colonial pairing of Tuvalu (then called the Ellice Islands) with Kiribati (then called the Gilbert Islands) under the same administrative umbrella. It was the Ellice Islanders that the British favoured because of the characteristics they perceived in them. The Ellice Islanders were peaceful, civilised and industrious, bringing them closer than the Gilbertese to a favoured self-image that the British possessed. Besnier also notes that images of peace and harmony continued to be of use to Tuvaluan people after independence: in negotiations for aid and by Tuvaluan migrants in their dealings with the New Zealand Government. From my reading of the interview extracts above, a territorial dimension is now being highlighted in external images projected by Tuvaluans in the climate change context. Specific references to Tuvalu’s island territories as important enabling devices in the expression of Tuvaluan culture have become tools in climate change conflict.

Participants themselves pointed out the strategic role that climate change narratives can play. They recognised that powerful spatial ideas, particularly the smallness of Tuvalu’s islands, are important political tools. It was stressed to me many times during interviews that, given a lack of material wealth in Tuvalu, “our voice is all we have” in climate change conflict with the developed world, particularly the United States and Australia. However, while identity building is politically strategic, the process does not necessarily equate with opportunistic ‘invention’:

> [T]he process of social and cultural persistence is political all the way back…cultural forms will always be made, unmade, and remade. Communities can and must
reconfigure themselves, drawing selectively on remembered pasts. The relevant question is whether, and how, they convince and coerce insiders and outsiders, often in power-charged, unequal situations, to accept the autonomy of a “we” (Clifford 2001, 480).

Tuvalu’s ‘sinking island’ identity, however, has also been used to advance political conflicts that often have less regard to the maintenance of Tuvaluan cultural heritage. Tuvalu is often described as the ‘canary in the goldmine’ of climate change as a global problem, for instance, a metaphor that speaks volumes about Tuvalu’s ultimate expendability. The veracity of sea level rise narratives has also been hotly contested, by climate sceptics and at times by the international media, driven by their own political, academic and financial interests. The journalists, photographers and documentary makers that have visited Tuvalu since the 1990s to report from climate change’s ‘frontline’ have been so numerous that an informal network of key informants can be traced through media narratives on Tuvalu. These people include the current Prime Minister, the Director of Meteorology, a Conservation Area officer, and Tuvalu’s first Prime Minister, all of whom have participated in many interviews on climate change issues. At times discovering that their responses were used in the media in ways that they did not intend, they have, not surprisingly, learned how to be more much savvy in their responses.

As another of these climate change interviewers, although not a journalist, I needed to be alert to participants approaching my interviews carefully and strategically. In the following extract, the participant was explicit in voicing his concern that my research might contribute to a negative portrayal of Tuvalu in the outside world. My identity as an Australian and a researcher were important in the way our conversation unfolded.

Carol: How would you like people to see Tuvalu?

Ioane: If I just came back from Australia, I won’t try to say something that people in Australia won’t like to hear. I wouldn’t say something bad about Australia.

Carol: Even if you didn’t like the place?

Ioane: Well, I will put it in a way that people will try and understand it. But its no use telling them….I mean, there is always a bad side of a country, but first of all, we have to respect what’s in their country…..because if you go to the country, it doesn’t mean you have to see the bad side of the country, no, you are there, if you come back, it
means you are okay, so why tell people about the bad side of the country? Even though in reality there is, but if it doesn’t affect you, then just leave it alone.

My conversation with Ioane took place a few weeks after a motion was passed in the Tuvaluan Parliament\(^5\), ‘that the government of Tuvalu should be more aware of the journalists who are coming into the country’ (Motion 31, 1\(^{st}\) August, 2005, Parliament). The rationale for this motion was described thus:

There are so many different views given to these journalists, that is why we bring up this issue for it can really affect our country in some ways. Some say that Tuvalu is sinking as the result of sea level rise, but some say that all this is not true at all. The main objective of the motion is that the government should have a particular body or contact point that can meet with these journalists. So when these people come they don’t need to look around for information because there’s these appointed people that could answer their queries. But if these journalists still want more information from our citizens then everything could be organized by the contact point (Hon. Kausea Natano).

The activities of journalists (and researchers) were debated as an important mechanism for projecting Tuvalu’s image to the outside world. Media corporations with an interest in Tuvalu were viewed as a possible source of revenue for the country:

There should be a fee charged to these people. Of course these people should be screened, they can’t just enter the country to come and produce documentaries for their earnings, especially when they are big and well known companies…[also] single journalists could become a problem to our country; because they could interfere with our relationship with other bigger countries concerning this issue ‘the sea level rise’ or else other economic issues that the Ministry of Finance is not aware of. So we should take care of these kinds of people who write stories about Tuvalu more carefully (Hon. Alesana. K. Seluka)

We do understand that the point of this motion is that we don’t want these journalists to come and just make use of us, citizens of Tuvalu. Therefore I strongly support the idea that there should be a body or Ministry to take care of this, where they have the power to allow or not allow journalists into the country (Hon. Elisala. Pita).

Alert to the power of media interest in their country, my identity as an Australian would have played an important role in all my conversations about climate change. The Australian Government is a donor and an antagonist in climate change debate, facts that would likely make participants (particularly Government officials and politicians) cautious about what they said to me. Indeed, some told me that they were being careful, because I was

\(^5\) Official Parliament transcript (translated by P. Solomona).
Australian. In response I did make it clear that I was not in any way directly associated with the Australian Government. Nevertheless, participants were reluctant to criticise Australian policies on Tuvaluan migration into Australia and on the ratification of the Kyoto Protocol. Participants were also keen to remind me that, far from being limited to exposure in academic circles or among the Tuvaluan community, my research was potentially of broader interest and the media might have a role to play in publicising it. I have, in fact, been approached three times by different journalists to speak about my research. Each time, I tried to think very carefully about what to say. I suffered the embarrassment of trusting one journalist to send me his story for ‘fact-checking’ before it was published. He never did. I felt that the three or four lines in which my work appeared in his story only covered a part of what I had tried to say in our detailed conversation. Had I, in a small way, contributed to the negative identities my participants had voiced concerns about, and did it matter if I had?

ETHICAL EXPLORATIONS

Chambers and Chambers (2002), in their anthropological work with the Nanumean community of Tuvalu, highlight a projected external image of Nanumean cohesion. This image finds expression partly in the self-definition of the community as descendants of Nanumea’s legendary founder, Tefolaha. The strength of this identity, however, masks internal division. Different versions of what happened to Tefoloha’s descendants structure conflict in the community:

One family, for example, stressed the founder’s allocation of a key leadership role to [Tefoloha’s] youngest son, who was, not surprisingly, a founding ancestor for them. Another family’s story, focusing on several generations lower down in the same family tree, emphasized the role one descendant of that youngest son had played in outsmarting and killing invaders while other leaders fled for safety to a neighbouring island. This event legitimated the family’s current political claims…Clearly, the political fortunes of extended families wax and wane at least partly in response to the persuasiveness with which their members wield their versions of historical-mythical narratives (Chambers and Chambers 2002, 162).

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6 I have referred only briefly to the Nukulaelae and Nanumea communities. There are in fact eight communities (corresponding to eight of Tuvalu’s nine islands) which are often subdued in discourses that emphasise national Tuvaluan identity. However, identification with these communities is extremely important in many facets of political, cultural and social life in Tuvalu.
In his work on Nukulaelae, much of which focussed on gossip, Besnier also gradually came to see internal division where he had previously only seen peace and harmony:

My increasingly modulated understanding of the social dynamics and structural context of the community gave me a new perspective on atoll life as rife with discord and injustice. …My focus on sensitive issues raises questions about whose voice I should articulate in my ethnographic work. At least two sets of voices emerge: the official version of reality, ratified and articulated by the powers that be… and the unsanctioned version of reality, illustrated by the painful experiences of marginalised individuals… whose dissenting voices I have come to know gradually but intimately over years of fieldwork. [Moreover] these two sets of voices are not necessarily homogenous entities, and the boundary between them is often difficult to identify (Besnier 2000).

In pondering these two sets of voices, Besnier raised a very important ethical question: to what extent is it justifiable for a researcher to undermine a projected image of community cohesion that has been so useful to an otherwise powerless community against outside forces? This question is of crucial salience to my work.

In addressing this ethical question, my starting point is to consider whether exposing community cohesion as a political tool to critical scrutiny necessarily has to equate with undermining it. Opening up identity construction to critical discussion can be a strengthening device. Used uncritically, political tools can do harm as well as good. Moreover, while an image of community cohesion may be useful in some circumstances, is it necessarily a useful tool for dealing with climate change issues? Are there other politico-cultural devices that could also be fruitfully mobilised? These questions indicate to me that more, rather than less, research into identity construction among the marginalised is important.

However, the question remains concerning my right as an ‘outsider’ to expose and intervene in the identity construction process. That my research actively contributes to imaginings of Tuvalu is not a trivial matter. Aside from

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7 Goldsmith had a different experience. In his research on Christianity in Tuvalu, he had as a mentor a senior member of the Tuvaluan Church. With his mentor’s blessing, Goldsmith did not feel any qualms about publishing criticisms about the Church’s members, officers, and policies (Goldsmith 1996).
8 Besnier’s involvement with the Nukulaelae community far exceeds my own (thus far) fairly brief encounters with the Tuvaluan community. However, being a novice researcher does not preclude me from taking my ethical responsibilities very seriously. To this end I am very grateful that other researchers have published reflexive pieces on research in Tuvalu (Besnier 2000; Goldsmith 1996; Chambers and Chambers 2002).
interactions with journalists, I have placed academic papers in the public domain and distributed them to various participants and/or researchers with an interest in Tuvalu and/or climate change (Farbotko 2004; Farbotko 2005a; Farbotko 2005b). I have conducted interviews and made presentations that may have brought certain issues about climate change to the fore and suppressed others in people’s minds. Similarly I have engaged in many casual conversations about Tuvalu’s climate change imperatives. It would be foolish of me to ignore my own role in the constitution of climate change discourses, however minor my contributions might be. Far from being merely “superfluous handwringing or … foolhardy self-exposure better suited to the confessional” (Besnier 2000, 38), reflections on my role in the research process are important in ensuring that it is trustworthy. Indeed, I take very seriously the demand that members of the academy reflexively engage with the ways in which Western knowledge about non-Western places can be complicit in colonialism and neocolonialism (Said 1978; Malkki 1992; Gregory 1995; Gregory 2003; Tuhiwai Smith 2005). In a conference forum like this one, I can usefully open up my work to scrutiny among a community of island scholars and practitioners.

Thus it is necessary to reflect on my own identity, in order to consider how it impacts on my understanding of the topic, as well as how it impacts on the way participants see me. With one Finnish and one Polish parent, I have never felt a strong affiliation with Australia’s British connections. My parents both came to Australia as children, and, in an effort to fit in, downplayed their respective cultural identities. They became Australian citizens, and did not teach my siblings and me their mother tongues. Being the daughter of migrants (one of whom was a refugee) I, like many other Australians, have sometimes struggled with understanding what it means to be ‘Australian’. I find myself identifying closely with Australia’s heterogeneity. I am also aware that I am white and middle class and this means that my comfortable life is not shared by many indigenous Australians and migrants who do not fit the hegemonic Anglo-European mould. For part of my adult life I have moved cities every year, including moves to the other side of the world. I always moved by choice but spent a lot of time trying to understand where I felt most ‘at home’. I realise that this restlessness is enabled by my privileged educational and economic opportunities, but it has nevertheless contributed
to my research interest in place-based identities. My reflections on being Australian have provided me with an appreciation of the shifting cultural meanings that movement and rootedness can take on.

When I am in Tuvalu, my Australian passport, my university affiliations, and my stated interest in climate change are all identities that impact on the way the research takes shape. As a researcher I can, without compromising my commitment to academic rigour, to some extent elevate and demote such things as my gender and political positioning when I find it useful to do so in my dealings with others, in the process hopefully opening my discussions to a range of different viewpoints. I have been asked many times why I chose to conduct my research on Tuvalu. In answering I honestly stated that, like many other people in Australia, I had been alerted to Tuvalu’s potential climate change impacts via the media. This publicity sparked my interest in discovering more about what Tuvaluans thought about climate change and the interest being shown in their country by people around the world.

I discussed the issue of my right to contribute to identity-building through research processes in some detail with Ioane, who asked me to reflect on the ways in which my own identities as an Australian and as a researcher were impacting on the research process.

Carol: it’s interesting what you said about not looking at the bad side, for me as a researcher, part of my job is to look for problems, you know.... me being here as a palagi (European foreigner) researcher, what do you think are my rights and responsibilities here?

Ioane: Well first of all you should ask yourself, what am I doing here? ....what am I going to do with the research? To me, people do a lot of research, but to me it’s like, if you research you are trying to find problems. When I was in school my teachers always said ‘all problems have solutions’ you know but it’s really up to you. If you find a problem, but you don’t do anything about it, then what’s the point of the research?... Most of the people when they come from Australia....they won’t try to do anything about it because Tuvalu is so small. That’s how I see it. So, you know, it’s just like David and Goliath... How do you feel, like when you came, how you study about Tuvalu, how do you feel about climate change yourself? I’m asking you.

Carol: I feel a responsibility as a person from the industrialised world where these problems originate, to try and do something to help.

Ioane: You know, I am glad you answered that question, you know why? Because you just answered your own question, see? I put it this way, if I’m a Tuvaluan and I go to Australia, and I want to try and tell them what’s happening here, would they agree with me or not?...Can my voice be heard?... They will understand, but they
won’t do anything about it. You know why? Because we picked the problem. But if you pick the problem, and give your voice out there, they will listen to you, why? Because you are part of them. You are living in the environment they are living in. And you are our voice there.

Ioane was certainly not suggesting that somehow I was Tuvalu’s sole advocate in Australia. But he was tapping into the broader political context in which my work is situated, highlighting what he perceived as the benefits of research on climate change being conducted by an outsider, specifically by an Australian citizen. Ioane was also making a request. In return for my research work in Tuvalu, which would further my own curiosity and my academic career, I have a responsibility to listen to what participants want me to do with the knowledge I create. For Ioane, this meant the wise use of my voice in Australia, a responsibility I take very seriously. This extract highlighted for me not only the necessarily political nature of research, but the importance of clarifying the political positioning which inspired me to do the research in the first place.

However, the postcolonial academy reminds me that ‘communities are not homogenous, do not agree on the same issues, and do not live in splendid isolation from the world. There are internal relations of power…that exclude, marginalise and silence some while empowering others’ (Tuhiwai Smith 2005, 86-87). On the issue of climate change, I encountered minority voices. There are people who choose not to contribute to the building of the place-based identities I have been discussing, or are in some other way marginalised. How do I bring the silences of those participants who were invited, but declined to be interviewed, into my research? What can I learn from participants who requested that their involvement in my research be decoupled from the organisation with which they were associated? How do I incorporate the ways in which climate change is understood by many Tuvaluans through the lens of a strong Christian belief that God’s power is not for humans to question or to try and ‘know’? How can I reconcile giving voice to marginalised perceptions of climate change with the possibility that in doing so Tuvalu’s image of community cohesion will be fractured?

Ultimately, my voice must be a response to calls for recognition of the way climate change is related to identity construction by a variety of Tuvaluan
people. I feel that I have been invited (albeit not personally) to take up research into climate change by Tuvaluan leaders. They have been urging populations of industrialised countries who continue to increase their greenhouse gas emissions to do something to help. At the same time, by not aligning myself with any particular faction within the Tuvaluan community, I can hope to make heard a range of different voices in Tuvalu. I hope that my research will be useful to the people of Tuvalu and also in Australia and New Zealand and elsewhere that issues of climate change in the Pacific are being hammered out. With or without my research, Tuvaluan destinies will be shaped by forces internal and external to their own communities.

CONCLUSION

Nick was almost successful in publicly unsettling Fuli’s attachment to Tuvalu. Although I knew Mili and later Fuli quite well, in all the mundaneness of everyday life, I realised that even though both were well informed about climate change and were sincerely concerned for their country’s future, the issue played the most minor of roles in their daily concerns, which revolved around work, family, education, community and church. While Nick was attempting to impose a particular identity on the two women in the filming process, they both exercised strategies for resisting it.

Like Nick’s journalism, any academic representation of a community is partial. In this paper I have reflected on how I can ensure that my research fulfils my ethical obligations to the Tuvaluan community, at the same time as balancing a range of different voices. The issue of rising sea levels cannot be separated from the representations that attend physical changes in Tuvalu’s islandscapes. If identity is a powerful political tool, as a researcher, I need to always be aware of the risk that my projects will contribute to unequal power relations. I also need to consider how my work interacts with other arenas, such as the environmental movement, development institutions and the international media. As a novice researcher, my doctorate not yet complete, I

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9 Nick’s piece was scheduled to be broadcast in his country about a month after the incident I have related took place. Interestingly, as far as I have been able to ascertain, his story on Tuvalu has been, for the moment at least, shelved.
hope that my understanding of these issues will develop in the coming year (and beyond).

With these considerations in mind, I have interpreted the impacts on place and Tuvaluan culture as strategic tools. These views, spoken to me as a citizen of Australia, represent an appeal to people in the industrialised world to reflect on our practices that contribute to climate change in a particular way: as instruments of ecocolonialism.

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The construction of atoll space: exploring the meanings of climate change in popular culture

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ABSTRACT

Atolls are frontier spaces of climate change, expected to undergo considerable physical alterations generated by anthropogenic climate change processes. However, transformations in atolls are not only physically significant. There are changing meanings of atoll spaces in the context of climate change that have real impacts on how these spaces are used and represented, and who has the power to influence their use and representation. Exploring these meanings can contribute to a better understanding of how people are adjusting to climate change challenges. The purpose of this paper is to investigate how the meaning of atoll space is being rewritten in popular culture. I have chosen a particular atoll narrative, Mark Lynas’ *High Tide: News From A Warming World*, which relies on a paradoxically menacing and soothing ‘coastscape’ at the border between land and sea to construct and reinforce Funafuti, the administrative centre of Tuvalu, as a space of contradictions: timeless yet changing, captivating yet oppressive, and paradisiacal yet fearsome. I explore how the inscription of these apparent contradictions in *High Tide* works against the production of multiple, complex meanings of the spaces of climate change and reinforces problematic constructions of territorial identity.

KEY WORDS
Atoll, climate change, critical geography, Funafuti, popular culture, representation, Tuvalu

Introduction: coming to terms with climate change - a spatial perspective

Coming to terms with climate change is a partly spatial practice. At the intersection of the discursive, material and lived processes of climate change, some remarkable spaces are emerging. These include melting glaciers, new locations in which mosquitoes thrive, and the inundation of low-lying areas by warmed, rising seas. It has been widely observed that the social and ecological impacts of climate change are inequitably distributed in type and severity across the globe and that this inequity needs to
be incorporated into climate change decision-making (Hey 2001; Huq et al. 2003; IPCC 2001; Metz et al. 2002). The object of inquiry in this paper is the atoll, an island space that is expected to undergo considerable physical changes generated by anthropogenic climate change processes. These changes include sea-level rise, storm surges, and changing rainfall patterns, that, in turn, are expected to affect land use, agricultural livelihoods, infrastructure, human health, marine and coastal ecosystems, and water resources (Hay et al. 2003; IPCC 2001). While predicting future climate change impacts and associated decision-making has been characterised by uncertainty and disagreement, one of the most prominent ways of framing the problem of climate change for atoll communities is in terms of the possibility of adapting to sea-level rise within national boundaries (IPCC 2001) and the potential necessity for relocation. In and through the atoll as a space of climate change, cherished ‘spaces of belonging’ (Morley 2001) such as the home and the nation are being challenged, as future permanent migration away from atolls is viewed as an increasingly likely scenario. Thus, the space of the contemporary atoll is being physically generated through climatic processes and experienced in new ways. Its changes are being debated, measured and speculated on in words and pictures.

Given the foregoing, transformations in atoll spaces are not only physically significant, there are important changing meanings of atoll spaces in the context of climate change. Furthermore, climate change is constituted spatially in ways that are of significant practical and political relevance. My purpose in this paper is to investigate how the atoll is being rewritten in one example of popular culture in order to contribute to a better understanding of how people are adjusting to climate change challenges. My specific objective is to explore an attempt to stake a claim in the evolving production of atolls as spaces of climate change. I have selected a narrative by an environmental activist, journalist and author, Mark Lynas (2004). I examine his account of one the atolls of Tuvalu in a book of popular natural history titled *High tide: News From a Warming World*. This data source is just one example drawn from a broad range of climate change discourses in which atoll spaces are being constructed, including the media, international institutions, environmental organisations, research, and national governments. I am examining representations of Tuvalu in these discourses as part of a wider research project on how Tuvalu is being constructed in the geographic imagination. In this paper, I examine as a case-study Lynas’ book. It draws on the authority of scientific research and personal experience to produce an account of the spaces of climate change for an audience that will mostly never know more directly the remote locations in which atolls are found. I hypothesise that there are changing meanings of atoll spaces in the context of climate change that have real impacts on how these spaces are used and represented, and on who has the power to influence their use and representation. Through the methodological approach of discourse analysis, I examine how an atoll and its community might be imagined in an account of climate change in the popular arena.

The emphasis on representation, defined here as practices whereby meaning is constituted and communicated, is important for several reasons. Firstly, representations of climate change have not been extensively researched from a spatial perspective, and more broadly, cultural interpretations of

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climate change have not received a great deal of attention from researchers. Secondly, atolls are often remote, isolated, marginal spaces that, notwithstanding the importance of the direct experience of the inhabitants and a very small number of outside visitors, are more likely to be encountered by members of the wider international community in representations, especially those in popular culture. Thirdly, the sheer quantity of representations of atolls in the context of climate change, and the significance attached to the isolated atoll as a frontier space of climate change in international institutional and media discourses, warrant critical investigation. Finally, while it has been widely predicted that atoll communities face some of the most serious impacts of climate change, physical atoll changes have been difficult to observe and measure (Hunter 2002). Current physical transformations in atolls are highly contested (Eschenbach 2004; Hunter 2004). There has also been much speculation in various narrative arenas about how future transformations in atoll geomorphology will occur, what the impacts on atoll communities might be, and what possible courses of action might be taken in response to these impacts. While it is from the conjunction of the physical, represented and experienced forms that new spaces emerge, much of the shaping of atoll spaces is occurring through appeals to imagined future physical events and experience. Representations make these imaginings accessible. As readers are invited to imagine the meaning of climate change through and for the people of Tuvalu, it is important to examine the book’s political leverage, because geographical language is never neutral (Barnes and Duncan 1992).

Changing spaces: the atolls of Tuvalu

Located in the western portion of the Polynesian triangle, Tuvalu is remote from the heavily populated cities of the Pacific Rim. A sovereign state since 1978 and a member of the United Nations since 2001, Tuvalu comprises nine atoll groups and has a population just under 10,000 (Secretariat of the Pacific Community 2004). Tuvalu has been settled by a community of mainly Polynesian people for at least several hundred years. In the nineteenth century Tuvalu became a site of increasingly frequent and complex interaction with Europeans and others from outside Polynesia, including whalers, traders, blackbirders, and missionaries. The Tuvaluan atoll group, formerly known as the Ellice Islands, was declared a protectorate by the British in 1892. It was administratively amalgamated with the Micronesian islands of Kiribati in 1915. With a land area of 26 square kilometres and a relatively small population, Tuvalu was never a significant space of trade for the British and remained a ‘Cinderella of the empire’ (Macdonald 1982) until the Tuvaluan population achieved independence as a sovereign nation. Since then, Tuvalu has emerged as a space of conflicting economic identities to observers of island micro-states. To a significant extent, the Tuvaluan economy is driven by migration, remittances, aid and the employment offered by government bureaucracy (Bertram 1999). However, the Tuvaluan Government has also displayed economic innovation by investing aid money in a trust fund to provide a source of revenue and by harnessing the ‘resources of jurisdiction’ (Baldacchino and Milne 2000). These resources have included an emphasis on funding education, philately, the sale of international telephone line surpluses, and leasing the commercially attractive ‘.tv’ internet domain (Finin 2002; Knapman et al. 2002; Mellor 2003).
Climate change became a political issue among the international community in the 1980s. Low-lying atolls, including those of Tuvalu, were identified as spaces that were particularly vulnerable to climate change related sea-level rise:

For most coastal dwellers around the globe there will be the option of retreating inland to higher ground. In some countries, especially those with rich agricultural land and dense populations in low deltaic plains, enormous economic and social dislocations can be expected, but the most extreme situation will be faced by small ocean island states occupying low coral islands on atolls. Here high land does not exist and whole populations may be displaced and left country-less (Connell and Roy 1990).

Tuvaluan Government representatives have been vocal advocates of international mitigation of climate change through reduced emissions of greenhouse gases. In forums such as the United Nations and the Pacific Forum, they have articulated strong support for the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol (Sopoanga 2003; Toafa 2004). At a national level, the Tuvaluan Government has articulated a need to introduce national climate change adaptation and mitigation strategies as part of a National Summit on Sustainable Development. A National Adaptation Programme of Action is also being prepared in Tuvalu. This UNFCCC defined process is intended to identify priority activities, particularly at the community level, implementing measures that facilitate adaptation to climate change.

**Funafuti as ‘coastscape’**

Mark Lynas’ (2004) book is based on a journey to locations around the world in a ‘global quest’ for ‘the fingerprints of global warming’ (p.xxv). The result is a representation of a personal voyage through several spaces of climate change (including a Peruvian glacier, Alaskan villages and Pacific islands) and which is also informed by scientific research and the experience of others collected along the way. The author was driven by environmentalist concerns – his purpose was to contribute to safeguarding the world’s future against climate change by increasing awareness of its impacts among the general public. I am concerned with Lynas’ encounter with Funafuti, the most densely populated of Tuvalu’s atoll groups and its administrative centre, depicted in the chapter titled ‘Pacific Paradise Lost’ (p.81-124). This encounter was motivated by Lynas’ desire to investigate ‘whether the rumours of imminent evacuation [of the Tuvaluan population] were true’ (p.84). While it may seem incongruous to critique a publication that is perceived as sympathetic to the challenges faced by those most affected by climate change, I will demonstrate that a depiction of *High Tide* as such masks a more complex ideology. Drawing on the devices of the eyewitness report and the interview, the narrative seeks to provide evidence of both the physical impacts of climate change on Funafuti’s geomorphology and the consequent material changes in the lives of the people who live there. Examination of this account reveals an interpretation of climate change that relies on a paradoxically menacing and soothing ‘coastscape’ at the border between land and sea, to construct and reinforce Funafuti atoll as a space of contradictions: timeless yet significantly changing, captivating yet oppressive, and paradisiacal yet

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2 Subsequent direct quotations from Lynas’ book are italicized and referenced by page numbers only.
fearsome. I will explore how the inscription of these apparent contradictions in High Tide works against the production of more complex and nuanced meanings of the spaces of climate change and reinforces problematic constructions of ‘spaces of belonging’ (Morley 2001).

Funafuti as ‘coastscape’ is the space of Lynas’ encounter. He emphasises the narrowness of the atoll and the ocean’s presence is felt throughout the chapter. ‘At its widest’ writes Lynas, ‘Funafuti atoll is little more than five hundred metres across’ (p.84). On these ‘strips of island’ (p.84), where the lagoon lies on one side and the ocean on the other, life is conducted both in the water and on the land. The ocean is within earshot when not in sight, and the waves and the lagoon function as backdrops when they are not integral elements in Lynas’ narrative. Funafuti is closely defined by juxtaposition of the delicate narrow land with the omnipresent ocean, which provides fish for food, opportunities for play and relaxation, local travel, and relief from the equatorial heat. The atoll is populated with people who lead an ‘almost amphibious lifestyle’ (p84.). Children play in the waves, women chat in the water and an old man visits his pigs by canoe.

On the islet of Tepuka Savilivi, away from the urbanised areas of Funafuti, Lynas finds ‘a holiday brochure view of paradise: a pristine white beach topped with graceful coconut palms, surrounded by calm blue seas, and without a soul in sight’(p.123). Lynas’ imagined Funafuti is a stereotypical island paradise: ‘I let out a long sigh. This was what I had been waiting for’ (p.123). For the most part, however, Lynas encounters a much more mundane atoll. Back in the urbanised areas, Funafuti is a space of heat, barbecues, football and going to church. The physical environment, at times paradisiacal, is also a burden. Lynas finds the heat almost unbearable and the narrow fragility of the land at times frightening. He shudders to think of ‘how it must feel to be stuck there with a hurricane bearing down’ (p.84). Lynas’ overwhelming reaction is that ‘nothing much happens in Tuvalu’ but his response to this lack of activity on Funafuti swings between two extremes: ‘for a while I found this charming, then it drove me crazy, and then, just as I was about to leave, I began to find it charming again’ (p.81). Lynas constructs Funafuti as a space of contradictions, a liminal zone where the configuration of water and land make life both paradisiacal and oppressive, a space that is simultaneously captivating and fearsome. This construction of Funafuti in terms of binary opposites is further emphasised by a temporal paradox - Funafuti is both timeless and changing. For Lynas, Funafuti’s rhythms seem ‘isolated from the clamour of a rapidly changing outside world’ (p.81) and indeed, this image is projected in the marketing strategy of Tuvalu’s tiny tourism industry (www.timelesstuvalu.com). But such an image, Lynas maintains, is only ‘on the surface’ (p.84). While Funafuti has the superficial appearance of being ‘eternal – the people, the sands and the sea – all destined to stay here unchanged far into the future’ (p.124) and ‘it seems like life has tripped by at this gentle pace for centuries, and will continue to do so for centuries more’ (p.81), Lynas insists that the timelessness is only an illusion. For him, Funafuti’s reality is defined foremost by the devastating impacts of climate change, which are slowly making it an uninhabitable space. With ‘global sea levels creeping up’ (p.82) the inexorable pace of climate change is insidious, complicit in the construction of the illusion of timelessness on the atoll.
Nevertheless, Lynas was perplexed by the appearance of normal life going on around him when he arrived on Funafuti. Although he was under no misapprehension that ‘evacuation’ would mean ‘a queue of people standing desperately next to the airstrip waiting for the next plane out’ (p.90), he was surprised that road crews were busily improving the atoll’s infrastructure, and that there were plans to build a new government office. Even with the onset of the year’s highest tides around which his visit was scheduled, when sea-water welled up through the atoll and flooded certain areas, children played in the water as usual and a barbecue was prepared in knee-deep water. In High Tide various long-term inhabitants of Funafuti attest that these tidal events have increased in severity in recent years, pointing also to evidence that their crops are now being damaged by salty water and islets are disappearing under the ocean. Lynas is not the only visitor to observe the high tides. Their occurrence has attracted many journalists and others interested in gaining visual evidence of climate change impacts in recent years (Connell 2003). Images of large waves breaking against the shore of Funafuti have been circulated around the world in photographs, through descriptions and on film. The title of Lynas’ book is indeed suggestive that high tides have become symbolic of climate change. The image of water transgressing its usual boundaries and encroaching on the land, given its transience, presents a challenge to the constructed boundaries between now and the future of climate change devastation. For Lynas, there is poignancy in the high tides as children frolic amid rising sea-levels. When the king tides come, the kids of Funafuti ‘would periodically disappear in a mass of flying foam and spray each time one of the bigger waves hit the wall’ (p.96). Children playing in the water in the present seem to capture an image of what Funafuti’s future might be like.

While Lynas does not consider panic among the community to be a sensible response to climate change, for him the continuation of normal life on Funafuti, quite literally through the waters of the high tides, is an indication that the issue of climate change is not accorded a sufficient sense of urgency in Tuvalu. He perceives that the inhabitants of Funafuti, including Government officials, are concerned about climate change. However, on reflection, he considers that use of the emotive term ‘evacuation’ would lend the problem a greater significance. Lynas’ sense of urgency does not seem to relate to any immediate survival needs for the people of Funafuti. Rather, it pertains to the message he wants to send to the Governments of countries that are responsible for large quantities of greenhouse gas emissions. Although Lynas acknowledges that Tuvaluan leaders have highlighted their climate change concerns in international forums, what might be the moral implications of his urging the inhabitants of a small atoll country, without either political clout or extensive human and natural resources, to shoulder a global political burden of this kind? Should the people of Funafuti be asked to display a sense of urgency in response to climate change imperatives, which may, as Lynas recognises, possibly contribute to unnecessary panic among them?

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3 This building has now been completed and houses most government departments.
4 In August 2005, the Tuvaluan Parliament debated the effects on Tuvaluan society of media reports, particularly those related to climate change, with a view to ‘screening’ all such reports.
5 For example: www.tuvaluislands.com and ‘Paradise drowned: Tuvalu the disappearing nation’ (documentary made by Natural History New Zealand (2001)).
Interestingly the Tuvaluans themselves, including those in positions of authority, appear very cautious, approaching the issue of climate change with a sense of deliberation and an emphasis on incremental change. Lynas conveys their capacity to view climate change as an element of a complex and interrelated set of issues that must be considered in the context of economic and social well-being more generally (without appearing to subscribe to this more complex view himself). For example, under an agreement for 75 Tuvaluan people to migrate to New Zealand per year, one of Lynas’ contacts explained that any higher quota would cause rapid population depletion and be an instrument of social instability. Moreover, although Lynas seems to believe that migrants under this program will be motivated by climate change concerns, his informants appear more ambivalent. They speak of multiple reasons to migrate (and to remain on Funafuti) in addition to the threat of climate change, constructing Funafuti as a complex space where climate change is embedded in the religious, social and economic fabric, and in the landscape and the seascape. For Lynas, however, Funafuti is reduced to a space singularly defined by climate change. In constructing normal life as just an illusion, and climate change as reality, Lynas is able to legitimise what he sees as a binary choice for atoll inhabitants: ‘to move, and live cultureless and uprooted in a foreign country, or stay on the land of their forefathers and die’ (p.83). Yet the Tuvaluans, with their slow and incremental approach to the problem of climate change, seem to offer a more complex and nuanced meaning between these two extremes.

Lynas imagines migration as the death of culture. For him ‘migration’ means ‘the extinction of an entire island country and its way of life’ (p.92). By implication, it is the people, somehow ‘rooted’ in the land, that make the country. The effect of migration is constructed as a loss of land and a consequent loss of distinct identity. He wonders ‘how people could continue to believe in their future as Tuvaluans, when they must know deep down they have none’ (p.90, emphasis added). Lynas’ view that loss of land is deplorable is reinforced in his appeal to the Tuvaluan concept of fakaalofa. Meaning ‘deserving of pity’, it is the label that Tuvaluans attach to those without property. It is questionable, however, whether being deserving of pity necessitates a loss of culture and identity entirely. Lynas’ implicit territorializing of Tuvaluan identity contrasts with the testimony of a former Tuvaluan politician and statesperson who speaks of any relocation as a matter of cultural survival ‘so that when people move they can move with their traditions, their customs and their culture’ (Lauti, quoted in Lynas, p.93).

**Conclusion: entrenching spaces of belonging**

Mark Lynas constructs Funafuti atoll simply as a contradictory space. Its paradisiacal qualities are desired, but its fragility and exposure to climatic forces inspire fear. *High Tide* relies on a ‘coastscape’ that is both island paradise and a place where tidal waters transgress the land in new and threatening ways. These apparent contradictions are reconciled by presenting a captivating, timeless Funafuti as a mere illusion, while climate change is a fearsome reality.
Migration is perceived as the only solution to climate change imperatives, but is problematically equated with loss of culture. Questioning the consequences of processes in which identity is deeply territorialized is not a new endeavour (Anderson 1991; Malkki 1992). Underscoring climate change imperatives by emphasising a loss of identity in this way may serve a global political purpose. But what are the consequences of such a categorisation for atoll people, even for those Tuvaluans who are resisting this very categorisation? The reification of territory in a way that defines a person’s identity is not only reductionist, it is potentially disempowering. I would argue that raising awareness of climate change in popular culture should involve a more complex and nuanced representation of the spaces of climate change. Many climate change researchers highlight the importance of adaptation to climate change for communities threatened by its impacts (IPCC 2001). Framing climate change imperatives in terms of adaptation (into which a discourse of relocation can be embedded) might advance the complexities and nuances of how, for the people of Funafuti at least, climate change is being grappled with in everyday life.

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ABSTRACT: Cultural relevance and the inclusion of indigenous “ways of knowing” in learning about the environment have been cited as critical factors towards promoting transformative learning in students. Moreover, research at the secondary school level of education has shown that sustainability science curriculum that is “place-based” can promote better attitudes of native students towards the subject of science, and can help in the process of individuals gaining a “sense of place” in their immediate environment. This research focuses on pre-service elementary school teachers in an education program at Chaminade University in Honolulu, Hawaii. Two cohorts of undergraduate education majors have been observed for two consecutive semesters to see how learning and any transformative processes are affected by student experiences as they complete a course in environmental education that focuses on sustainability science and Native Hawaiian ways of knowing within a localized Hawaiian context (the island of Oahu). Throughout the semester, students in the course have been exposed to scientists and experts currently working in the field of environmental science, and they have participated in various field projects concerning environmental issues in the Islands today. Journal writing and self-reflections, group and individual discussions, the development of an integrated curriculum unit, and the compilation of an environmental science portfolio were also important components of the course. In addition to gaining the content and pedagogical knowledge for the subject of environmental science, students were also assessed and evaluated for critical and independent thinking skills, problem solving capabilities, and personal growth/transformations. This ongoing qualitative study reveals how culturally relevant learning in science education can help pre-service teachers develop and refine that “sense of place” and gain an awareness of the importance providing for an indigenous, place-based science education in their future classrooms.

Key words: sense of place, sustainability science, transformative learning, native/indigenous ways of knowing, place-based education, ecological literacy, situational interest, nature of science

Problem Statement and Rationale for the Study:
As progressive educator John Dewey advocated for experiential, relevant, hands-on, and student-centered approaches to learning (Dewey, 1938), the concept of place-based education, while a relatively new term, has been around for over 100 years. This concept of place-based education encompasses Dewey’s ideals of allowing for students to learn in their local
environments, to become connected with their surroundings (both the natural environment and the people who have lived in a sustainable manner for a number of years), and to eventually achieve local ecological and cultural sustainability (Woodhouse & Knapp, 2000).

In a world that is seemingly becoming more and more concerned with globalization, and understanding and accepting ideas and practices on a grander scale for the good of humankind and the planet Earth as a whole, we may be losing those local connections, those cultural practices of a particular community, and those environmental ethics held by our elders. As Arenas (1999) points out in his defense of the pedagogy of place, he argues that without negating the importance of having a sense of responsibility towards the global community, children must first have a well-grounded knowledge of their own place before they can begin to comprehend and feel any commitment towards issues and problems in distant places. The need to reconnect with our local environments (people, culture, and nature) can be envisioned as way towards retaining those native practices and ways of knowing so that ecological sustainability can be achieved. A place-based curriculum can be tied to environmental science courses taught at all levels (K-12, and at the college levels as well), as this has been the case in the state of Alaska, whereby Alaskan native educators have developed standards for “Culturally Responsive Schools” based on the grounding of indigenous language and culture to a particular place to promote the development of culturally-healthy students and communities associated with that area (University of Fairbanks, 1998).

As an instructor for an environmental education course for preservice teachers at Chaminade University in Honolulu, I have the unique opportunity to complete a case study of my students and observe/assess how they are affected (behaviorally, emotionally, and physically) by experiencing a semester course designed with a sustainable science, place-based curriculum in mind. Moreover, as other studies incorporating environmental science with indigenous/native cultures, native ways of knowing, and relevant, action-oriented exercises have revealed positive changes in (middle school through college) student attitudes and behaviors towards science (Barnhardt & Kawagley, 2005; Ebbs, 2003; Feinstein, 2004; Hodson, 2003; Palmer, 2004; Settee, 2000; Sutherland & Dennick, 2002; Volk & Cheak, 2003; Wither, 2001), I am also
assessing my students for any transformative learning that may be taking place in the 15 weeks of the semester. Another issue that arose earlier in this study was the confidence levels of preservice elementary school teachers in the subject of science and how they will eventually teach and facilitate science learning in their classrooms. I propose to include this topic in my research as well.

**Literature Review:**

Derek Hodson, in his article on reform in science education (2003), strongly suggests that science curricula in the Western, industrialized society needs to be politicized, technologically-based, and issues-based (action-oriented) with focus on seven areas of concern: human health; food and agriculture; land, water, and mineral resources; energy resources and consumption; industry; information transfer and transportation; ethics and social responsibility. The author’s solution to global issues and the very future of the planet is to link action research with community involvement in science curriculum development and teacher education (Hodson, 2003). While I applaud these proposals and ideals by Hodson, I do feel that the missing component to this systemic reform process in science education is the critical inclusion of cultural values and practices and native “ways of knowing.”

Palmer (2004) studied his students in a semester long science content/methods course for preservice primary school teachers, with specific interest in “situational interest” in the learning environment and the attitudes of students towards the subject of science. The study revealed that hands-on activities, learning about science concepts, use of personal anecdotes and science trivia, and learning how to teach science all contributed in some way to creating situational interest in the course (Palmer, 2004). It was concluded that the generally positive effects on students’ attitudes towards science at the end of the course the sustained situational interest was the likely cause for change/improvement (Palmer, 2004).

Another study by Sutherland & Dennick (2002) explored the views of seventh grade students from First Nations (Cree) and Euro-Canadian backgrounds had about the nature of science. Using a Nature of Scientific Knowledge Scale (NSKS) questionnaire, open-ended questions, and interviews, the author focused on how language and traditional beliefs of non-Western students affect their views on the nature of science, which has been suggested by some
researchers that “the way in which a student perceives the nature of scientific knowledge also influences that way in which they approach learning the discipline” (Sutherland & Dennick, 2002, p. 18). The conclusions made from this research did further the argument that culture and language affect the way students perceive science, but emphasized that approaching topics in science from a multicultural perspective (where cultural symbols are used without the cultural knowledge) may confuse students in the early grade levels (as with the grade seven students in this study) (Sutherland & Dennick, 2002).

Barnhardt & Kawagley (2005) also looked at indigenous knowledge systems within the context of Alaska Native ways of knowing. In 1995 the Alaska Rural Systemic Initiative (AKRSI) was developed to partner 20 school districts with predominantly Alaska Native students to implement research-based initiatives that incorporated indigenous knowledge systems and utilized culturally relevant pedagogical practices and curricula with the formal education system. Over a period of ten years the initiatives, which have been aimed at fostering connectivity and complementarity between Indigenous knowledge systems and Western science, have served to strengthen the quality of educational experiences and consistently improve academic performance of students participating in the AKRSI (Barnhardt & Kawagley, 2005), and has even prompted the expansion of a M.A. program at the University of Alaska Fairbanks (UAF) in education by the development of courses in Indigenous knowledge systems.

Priscilla Settee, in her 2000 study on bridging Western and Native science education, uses a Hawaiian model from the Na Pua No’eau Center for Gifted and Talented Native Hawaiian Children from grades Kindergarten through 12 for the development of a project called Super Saturday. This program incorporated Indigenous knowledge with Western science in the context of teaching children began its pilot year in July 1998, sponsoring two groups of children in grades four through six. The students in the program were taught using cultural/traditional methods while promoting knowledge of ancestral accomplishments and cultural identity while learning other world view perspectives.

By studying the impact of an environmental education program (in place for five years in fifth and sixth grade classes) on students, the parents, and the island community of Molokai,
Hawaii, Volk & Cheak (2003) noted how learners took an in-depth look at environmental issues in their community, made data-based decisions about these issues, and participated in resolving these issues. Improved skills of oral communication, reading, and writing were noted in the students participating in the program, along with increased citizenship participation, and levels of maturity, self-esteem, poise, and autonomy. Teachers noted liberating effects of using such an integrated curriculum and positive effects on teacher efficacy were also recognized as a result of going through the program. Molokai community members were also positively impacted by the program, as they were impressed with the students’ knowledge base and their contributions to the community as a whole.

A recent study based upon adult learning and transformation in an environmental education course was completed by Benjamin Feinstein, and this involved a semester course he had taught within the context of Hawaiian Traditional Ecological Knowledge (TEK) (2004). Students were shown to shift their perspectives in TEK, and emerged from the course with a fuller understanding of the Hawaiian culture and native ways of interpreting the natural world (Feinstein, 2004). Student constructed learning, clarification of individual identities, and a shift in perspectives resulted: the transformative learning processes were experienced by a number of students in the course (Feinstein, 2004). One student’s transformation process in particular, Jasmine, a part-Hawaiian student adopted into a Caucasian family as a baby, was depicted in the study as an individual who found the experiences of the course the roles of TEK to be “educational, healing, and scientific” (Feinstein, 2004, p. 117).

As stated earlier in the rationale, there is also a concern for teacher attitudes towards the subject of science, the learning of science, and the teaching of science. In terms of teacher belief systems, researchers argue that teacher thinking or actions cannot be separated from their personal socio-historical past (Ebbs, 2003). Ebbs concludes that life history research is a critical method of inquiry necessary for preservice teachers to experience in order to recognize inappropriate beliefs, foster conceptual change, and build wider contexts for learning in the future (for themselves and their students) (2003). With respect to personal life histories, the importance of identification, articulation, exploration, and reflection in the early educational
experiences of preservice teachers is crucial, and may even be a catalyst for restructuring teacher education programs (Ebbs, 2003).

A case study of local curriculum development was completed in 2001 (Wither, 2001), and the topic of K-12 place-based curriculum development in rural communities was addressed. In this study the processes of curriculum development were outlined, and the issues faced among educators, administrators, and community members were addressed. The implementation of such a place-based curriculum was discussed and outcomes were positive in terms of teacher-community collaboration and authentic student learning with respect to social and environmental concerns of the community. Four qualities were deemed as critical agents of change in order for such a program to be successfully implemented: vision, inquiry, mastery, and collaboration (Wither, 2001).

Research Questions:
1. What are current attitudes of preservice elementary teachers towards the subject of science, learning/doing science, and teaching science?
2. How will a 15-week hands-on, experiential, environmental education course incorporating culturally relevant and Indigenous science ways of knowing affect preservice teachers in terms of understanding science concepts and principles?
3. How will cultural relevance and the incorporation of Native Hawaiian science ways of knowing help adult learners with the transformative learning processes and finding their “sense of place” in the Hawaiian environment? Will there be connections made between native ways of knowing and learning science in a Hawaiian environment?
4. How do teachers’ science knowledge and understanding of concepts affect self-confidence, what will be taught in the future classroom, and how the subject will be taught?

Definition of Key Terms:
1. “Sense of Place”—A set of values developed over hundreds of generations of evolving cultural connections to the natural, physical, and spiritual environments (Maly).
2. Sustainability Science—Curriculum that incorporates hands-on, applied techniques in agricultural science that promotes an awareness of ecologically sound practices in everyday life (Settee, 2000).
3. Transformative Learning—Constructivist mindset based on Mezirow’s theory that adult learning is the process of altering, modifying, or transforming the practices, attitudes, beliefs, and perceptions through personal experiences, reflections, and critical discourse (Di Base, 2000; Mezirow, 1997).
4. **Native/Indigenous Ways of Knowing**—Locally situated cultural learning processes and skills by which knowledge is transmitted, acquired, and utilized (Barnhardt & Kawagley, 2005; Feinstein, 2004).

5. **Situational Interest**—Interest that is generated by aspects of a specific situation that attempts to motivate students in the learning environment (Palmer, 2004).

6. **Nature of Science**—Understanding and perceiving the natural environment and natural phenomena with respect to cultural and linguistic constructs (Sutherland & Dennick, 2002).

7. **Ecological Literacy**—In addition to the generalized definition of literacy above, ecological literacy includes understanding of concepts of ecology and internalizing information dealing with environmental, social, ethical, and cultural connections, in order to make daily decisions based on real life experiences and passed down traditions of elders in the community. “The goal is not just the mastery of subject matter but making connections between head, hand, heart, and cultivation of the capacity to discern systems” (Ecological Literacy, 2005, p. XI).

8. **Place-based Education**—Based on the need to recreate the path to an environmentally peaceful and sustainable existence and the essential “re-imaging of the ethical, economic, political, and spiritual foundations upon which society is based,” (Sobel, 2004, p. iii) place-based education focuses on guiding individuals toward gaining a deep sense of local knowledge of the places in which they reside and call ‘home.’ Such a program can be characterized as the pedagogy of community and the reintegration of the individual into his/her homeland and the restoration of essential links between a person and his/her place. In practice, place-based education seeks to identify local ecological issues and remedy the problems through personal and cultural transformations (Sobel, 2004).

**Population and Setting:**

The setting for this qualitative study took place at Chaminade University of Honolulu, on the main campus for 10 of the 15 weeks that the course was taught in the Fall undergraduate semester of 2005, and in the Spring undergraduate semester of 2006. Five of those weeks for each term were spent off campus at various locations for field experiences and service learning projects pertaining to environmental education. The course, entitled “Environmental Education 448” (ED 448) is an upper-division course required for elementary education majors enrolled in the undergraduate program at Chaminade University. It entails a hands-on approach to learning about the local, Native Hawaiian environment while also allowing students to learn pedagogical methods for teaching and facilitating science in the classroom and surrounding environment. Science content and pedagogy with respect to Native Hawaiian and other indigenous cultures present (in the classroom as well as in the school environment in Hawaii) were taught, experienced, and explored throughout the course. ED 448 is a three-credit course taught in the
fall and spring semesters, and for the past two terms convened on Saturdays from 9 am to noon for the 15 weeks.

For this study there were 16 undergraduate students enrolled in the Fall 2005 course (cohort #1), ranging in ages of 22 to 42, with over 50% of them being in their early twenties. There were 13 females and 3 males, all of whom were in their junior or senior years in school. Seven were born and raised in the state of Hawaii, seven were born elsewhere in the U.S. or some other country but have lived in Hawaii for 15 or more years, and two were more recent transplants to the islands (two to three years of residing in Hawaii). Four students were of part-Hawaiian descent, eight others were of mixed ethnic backgrounds (Asian and Caucasian), and the other three students were of Caucasian background.

During the following Spring 2006 semester, cohort #2 consisted of 14 undergraduate students, ranging in ages of 20 to 33, with over 50% of them being in their early twenties. There were 11 females and 3 males, all of whom were in their junior or senior years in school. Six were born and raised in the state of Hawaii, while the remaining eight students were born elsewhere in the U.S. or some other country and were more recent transplants to the islands (two to four years of residing in Hawaii). Five students were of part-Hawaiian descent, five others were of mixed ethnic backgrounds (Asian, Mexican, South American and/or Caucasian), and the other four students were of a Caucasian background.

Methodology and Methods:

Methodology—Qualitative case study where I (the researcher) am not only the instructor but the participant and observer for the outings (field trips, service learning projects) that the Chaminade students are experiencing throughout this environmental education course. As I am interested in learning more about my students’ backgrounds (cultural, ethnic, social) and how they connect with the natural environment, I would also consider this research an ethnographic and auto-ethnographic one. I myself am going through this transformative process as well.

Methods—The methods employed for this research includes:
1. Taking field notes that are *in situ* and post-observational. Throughout both semesters I have taken my students on field trips to various places and events that would influence and encourage them to become more aware of their surroundings, how we as humans are impacting the environment, and how we are connected to our surroundings. Field notes were also taken while on the service learning field trips. The post-observational notes were completed two to three days after the field trips and service learning events, which allowed for reflective thoughts and insights to come forward. Field notes were completed for the: (a) H-Power plant field trip, (b) Lyon Arboretum field trip, (c) HaSTA conference attendance, (d) Pohala Marsh clean-up, (e) Honouliuli Preserve watershed field trip, and (f) Ma’O Farm volunteer work day.

2. During the second week of the ED 448 course, students from both cohorts were asked to write an essay describing “my place on planet Earth thus far…” whereby they were asked to share their experiences of exploration and inquiry in their local environments and at school. They were asked to discuss any highlights growing up with respect to learning and doing science in both the informal and formal (school) settings, and if there were any positive and/or negative influences while exploring and studying their environment. This science autobiography was given as an assignment to allow me, as the researcher, to gain a better understanding of the values and belief systems my students have towards their environment, their local community, and their own cultures. One key factor that was looked for in this assignment was this “sense of place” and connectedness that these students may have already developed as children and adolescents.

3. Pre- and post-assessment surveys were given at the beginning and ending of each semester for both cohorts in the study. The surveys did not change during pre- and post-assessment. They asked for personal information in the first section, they then utilized a four-point Likert scale asking for dispositions towards the topic of environmental science and environmental stewardship, in the third section they contained five opened ended questions, and finally, in the fourth part of the survey they consisted of a multiple choice section on environmental science content knowledge.
4. Student reflections were required throughout both semesters, with students given the choice to write up on four experiences of their choice. They were also asked to complete a final reflection on the environmental education course as a whole, comment on the “profound moments” in class and while on field trips, how they would utilize these experiences in their future teachings of environmental science, and give any suggestions for future organization of the course.

5. Five student interviews were conducted during the months of November and December in 2005 at Chaminade University for the Fall term. Four interviews took place in my office outside of the regular class meeting time. One interview was done prior to an evening class in the classroom itself. These interviews were one-on-one, open-ended (six questions), and recorded for transcription at a later time. Notes were also taken during the interview process, but for the most part the sessions were kept casual and conversational, lasting between 30 and 50 minutes each. Students were free to respond to questions or pass and come back to them later. For cohort #2, two interviews were conducted in May of 2006 at Chaminade University. Two other interviews were also conducted in May of 2006 at various locations off campus (i.e. coffee shops). For both cohorts of interviewees, interview methods were kept open-ended and informal, with respect to the participants’ own cultures and beliefs in mind. Interviewing methods were kept as close as possible to those conducted by “insider researchers,” where ethics, respect, reflexivity, critical thinking, and humbleness were conscientiously practiced (Tuhiwai Smith, 1999).

Results of Qualitative Data Collection (field notes, student surveys, student reflections, and individual student interviews):

Discussion of field notes results—Through these field trips and service learning events that have taken place over the 15-week semester, both cohorts of preservice teachers at Chaminade University and I have gained not only the knowledge of the environmental conditions and/or issues our natural surroundings on Oahu, but we have also experienced the collaboration and cooperation that is necessary to make this island a more livable and sustainable place for the people, plants, and animals so unique to Hawai‘i. As a Chaminade University
instructor I have also come to realize that the service learning component is a big part of receiving a sound, Marianist/Catholic education in addition to becoming ‘experts’ in designated fields of interest in a University setting.

One field experience for both groups of students had a lasting impact in terms of understanding just how much human beings can affect their environment in a negative way. While not always pleasant (in terms of the odors being emitted at the plant), the experience at the H-Power Plant in Campbell Industrial Park, on the Leeward side of the island of Oahu, made a lasting impression for all involved. Every student commented verbally and/or in writing (student reflections) on how we, as an island community, will need to think more about what goes in the trash, what gets reused, and what gets recycled. The impact that this trip to the H-Power plant at Campbell Industrial Park had was lasting, as it has truly changed the ways that my students and I think and behave. Many have since talked about recycling with their families, conserving electricity and water, and buying items like compact fluorescent bulbs to save energy. One student had informed the class that she had just bought a Honda Civic hybrid car since thinking about the many environmental issues surrounding petroleum-based, carbon monoxide spewing cars. Angie, a young mother of two, originally from the state of Georgia, found this experience at the bio-waste to energy conversion plant most profound for her as a student and as future teacher and mother of elementary school-aged children. She had not realized that there was such a process of converting garbage into energy, and commented on how this “makes sense” and could “not understand why Hawaii doesn’t have more of these plants.” For her, and her colleagues, the first step is to develop an awareness of the problem with landfills and the need to find alternative sources of energy. Another student, Steve, a Caucasian male in his early thirties, wrote “It is hard to believe that we are that careless that we throw away that much garbage everyday…the only good that comes out of producing that much garbage is that it can be used to produce electricity, which is what the H-Power does…I can’t believe that there are not more of them (H-Power plants) around.”

One field experience for the ED 448 class that did not directly involve learning more about the native Hawaiian environment was the participation in the Hawaii Science Teachers
Association (HaSTA) conference at Punahou School in Honolulu in the Fall 2005 semester. While students did not gain much information on the native environment as a whole, they did come out with a sense of belonging and camaraderie with those in the field of teaching. While not officially teachers yet, my students were beaming with pride as they exited the conference sessions that day. Some commented on how proud they felt to be an educator, and how they had learned to teach science with real life situations and hands-on and exciting ways. Those initial walls of fear towards the subject of science were slowly being broken down.

The other field experiences were service learning based, as they entailed doing volunteer work in the natural environment at various spots on the island of Oahu. Many of these experiences were dirty and laborious, and the complaints were jokingly made at the beginning of each event. By the end we were weary and covered with mud and soil and other ‘filth,’ but those negative remarks were no longer being made. There was almost a sense of peace and quiet reflection after each service learning experience, as everyone thanked one another for the hard work, and took their time to clean up and say their goodbyes for the day. The majority of students from both cohorts stated that they would readily volunteer to do clean-ups in the future and even get family and friends involved.

From these field experiences for the ED 448 course it became obvious that everyone (including myself) truly felt a sense of family belonging, and a better connection with this island that we all call home. The cooperation and hard work on everyone’s part truly made a difference, and students were beginning to feel like they can make a difference in terms of the fate of our native environments, and in the lives of their future students.

Discussion of essays, surveys and reflections—At the beginning of each semester students were asked to write about their experiences with their natural surroundings growing up. One student, a Caucasian male in his thirties who has lived in Hawaii (Oahu) for four years, wrote about how he “used to be one of those people who didn’t really care about the Earth” as he “thought it would last forever.” He goes on to write that “but now I am the total opposite,” and how he wants to see the planet being taken care of, not only for himself but for future generations, including his two year old son.
Another student who is of part Native Hawaiian descent, talks about her experiences with nature and with family members and dear friends as being “meaningful and rich” and that her life on planet Earth so far has been an “absorption of (my) rich Hawaiian culture, coupled with the influence of religion as a young human.” She goes on to say “I feel at home in Hawaii, and that I do belong, and that the Hawaiian culture passed down from my ancestors is a huge part of who I am…I do have some hopes for our planet, and our human race. I hope the overuse of precious resources will one day be a respected and controlled issue. And for my home here in Hawaii, the preservation of indigenous and endemic species on these islands, is an issue of deep concern for me. I want to educate the youth first…”

In reaction to the field trip to the Honouliuli Preserve along the Waianae mountain range in Leeward Oahu, another student, a Filipino/Japanese female in her early twenties, born and raised on Oahu, wrote of her experiences that sunny Saturday morning hiking up to The Nature Conservancy protected and maintained areas of the watershed. She had so willingly participated in hiking (for the first time in her life of 21 years!) up to the designated plot, weeding out the plot of invasive plants, and outplanting the plots with baby koa (Acacia koa) plants that day. She noted “as we headed to the trucks, I looked back and knew that what I had experienced is nothing like what I had ever done before. This is something that I will remember for the rest of my life. Nothing is better than experiencing hiking for the first time and planting baby koa trees…I actually felt like I was a part of nature for those few hours and I’m glad that I had this opportunity…On my way home from the field trip, I was very energetic because the hike inspired me to go on more hikes around the island. It really does feel good to get away from all the buildings and cars and just have a genuine connection with nature.”

In reviewing the student dispositions from the pre-assessment surveys given at the beginning of each term for both cohorts, it can be said that most students have always generally liked the subject of science, and prefer to learn science when it’s being taught outdoors in nature and done in cooperative teams. There were a few students that have had negative experiences growing up when learning/doing science, and all of them discussed how this course in environmental education helped them to become more comfortable with the subject and the idea
that they can teach science in the near future with greater confidence and conviction. There was an overwhelming interest in students wanting to learn more about native and endemic plants and animals in the Islands, and an overall sense that Hawaii’s natural environment is special and that it should be protected. A large amount (over 75%) of the students from both cohorts responded feeling connected to the natural environment and their own cultures/ethnic backgrounds. While this was the case, many of the students surveyed at the beginning of the semester did not understand how their own cultures/ethnic backgrounds were connected to the Native Hawaiian environment. Those that did not have this ‘sense of place’ here in the Islands were mostly from mainland North America, and had most of their family members living outside of Hawaii.

When asked to write an end of the semester reflection to be included in their student portfolios, all of the students in both cohorts wrote about the usefulness of the field trips and service learning events for the course. Students commented on how the experiences in this course, along with the portfolio collection of relevant activities and resources/contacts and environmental science content, will serve as a useful and meaningful guide in the future classroom. One student, who will be moving to a state outside of Hawaii for student teaching and her career of teaching, wrote: “I have learned from Ms. Fitzgerald that teaching is a job that requires networking, sharing of ideas and associations. Thus, everywhere I go, I will carry that knowledge with me; I will be open to meeting people, forming relationships and sharing ideas, for both the benefit of myself and my students.” Another student, born and raised on Oahu and planning to teach here in the Islands, stated in her semester reflection that “the field trips and the guest speakers we were privileged to have come to our class was a great experience…shows how in depth we can take (the subject of science) for our children so that they can get a deeper understanding of the materials they are learning. Being in a classroom all day can get pretty boring; that is why bringing students out into nature…exposed to the environment…gives them a different perspective…”

Discussion of student interview results—Five students for the Fall 2005 semester and four students for the Spring 2006 semester in the ED 448 course were interviewed individually; they were digitally recorded, and notes were also taken during the interview process by myself, as the
principle investigator and instructor for the course. Five of the nine students selected for
individual interviews were of part-Hawaiian descent; two other students were also born and
raised in Hawaii and of mixed Asian ancestries; one student was Caucasian and of a military
family living on Oahu for 2 _ years; the final student (the only male interviewed) was Caucasian
and in the U.S. military living in Hawaii for 15 years. As I was looking for the transformative
learning processes to be taking place in my students as the course progressed, and also gaining
insights as to how this “sense of place” can develop for individuals of varying backgrounds, I
selected these particular students based on certain factors prominent in the population of students
in each cohort (i.e. age, gender, ethnicity, place of birth, etc.). This refinement of quota sampling
was thus set up to reduce the problem of sample size, through a dimensional type of sampling as
explained by Cohen, Manion, and Morrison (2000).

Jennifer is a 22 year old female who was born and raised in Honolulu and of
Okinawan/Japanese descent. She said that one of the most profound experiences in this ED 448
course was the field trip to Ma’O farm on the Leeward coast of Oahu in Waianae. With a busy
lifestyle and very little time to prepare healthy, less-processed foods she was really impacted by
the organic farming practices at Ma’O. Moreover she had never done much work in the yard or
garden before this experience, and was ecstatic to actually get on a tractor and start the engine
that day. Her thoughts and practices now have even influenced her mother, who is buying more
organic products at the store and preparing healthier, less-processed foods for the family.

What she (Jennifer) gained from this 15-week environmental education course was the
importance of caring for Earth and protecting/conserving its natural resources. Her practices
now include changing all light bulbs in the house to compact fluorescent ones, eating more
organic and unprocessed foods, and recycling bottles with her grandmother. “The money
collected,” she exclaims, “will be used to take grandma out to dinner!” As a future teacher she
hopes to be working with the younger ones in grades Kindergarten through 2nd, and will be
instilling recycling practices and sharing with them the benefits of alternative energy sources like
that produced at H-Power.
When asked about her sense of place and belonging in this native Hawaiian environment, Jennifer says that she’s always felt close to family, friends and work, and has gotten closer with her fellow classmates in this ED 448 course at Chaminade University. While feeling very connected to people and social constructs in her surroundings, she does not feel much connection to her Okinawan/Japanese heritage. She considers herself “local, and from Hawaii,” and feels “safe” in Manoa Valley, where she has gone to school and where she has spend most of her childhood growing up (at grandma’s house). While her connections and sense of place with respect to the natural environment of Hawaii has improved slightly through this course and its experiences but no real transformative learning is evidenced. When asked how I, as the instructor of this course, could make this more of a transformative experience for the students, she felt that there could be more emphasis on learning about the Hawaiian culture and its connections to the environment.

Another student that completed the informal, open-ended interview with me was Malu. Malu is a 27 year-old female who was also born and raised in Hawaii, and grew up in Waimanalo on this island of Oahu. She is a senior in the education program who is an avid canoe paddler (who races in some events), hiker, and surfer, and of Hawaiian, Chinese, Filipino, and Spanish descent. Her process of going through this ED 448 course has been more reflective than Jennifer’s, and she spoke openly about her ties with family, friends, work, and the natural environment. When asked what her most memorable experience in the class was, she paused and said that “not one, but all of them, stuck out” to her, and then responded with “it has to be Pouhala Marsh!” She recalled how dirty and smelly it was for all of us out there, as we were pulling out the pickle weed plants from the marsh area in Waipahu. After three hours of manual labor she recalled feeling quite sore the next day, and even chuckled to herself as she stretched out before a soccer game.

During the interview process Malu mentioned that there so many things that she learned in the course, and even had “the time of my life” when playing the ‘loggers versus environmentalists’ game in class one day, and found the planets activity very hands-on, engaging, and visual. She stated that prior to taking the course, she had felt a little apprehensive
about taking a science course ("do not feel as passionate about science") and did not really care much about an environmental studies class: "Who cares? (I) need it," she plainly stated. As she went through the various field and classroom experiences of the course, Malu found herself enjoying the topic of environmental education and said that it is now "easier to teach" and that she is "more willing to teach about this (subject)." "It’s like coaching soccer; it just flows."

When talking about her Native Hawaiian background she mentioned sometimes getting too caught up in daily situations of work and school, and forgetting her roots. This course and the field trips, like the one to the Lyon Arboretum in Manoa, "made me think about things," she stated, after a few moments of silence. Paddling, hiking, swimming, and drinking ‘awa were things that connected her to her Native Hawaiian background that she wants to get more involved in again. Being out in the valley at Lyon Arboretum helped her to realize how connected she has always felt to the environment and growing up in Waimanalo. Malu’s sense of place with respect to her natural surroundings and her culture could be clearly observed and felt during the interview. She spoke of feeling a "sense of energy" when going into the forest, and also feeling “spiritually connected” in the forest and mountains of Oahu. Her connection to the water surrounding the island of Molokai was also expressed, as she mentioned a canoe paddling race one year where she felt “good karma” in the water while changing places in the canoe, knowing very well that there were sharks out there. She spoke of feeling “calm, safe, free,” and that “nothing (could) touch” her and that the sharks were amakua, family gods.

Leilani, a 21 year old student born and raised in Kahalu’u on the North Shore of Oahu, is of Hawaiian, German, Irish, Scottish, Chinese, and Filipino decent. In her pre-assessment survey she stated that she did not feel a sense of connection to the natural environment, nor did she feel any connections to her varied cultural backgrounds. When asked about how she felt environmental education could be taught with students’ native backgrounds in mind, she responded that it was necessary, as that would “increase their interest and it would mean more to them.”

During the interview, Leilani spoke of the most profound experience in the course being the trip to the H-Power plant at Campbell Industrial Park on the Leeward side of Oahu. She
recalled always using paper plates and plastic utensils for eating while growing up, while her grandparents would be using the ‘regular’ utensils and plates. Back then, it had not made sense that her grandparents were actually being less wasteful. About the H-Power experience, she said that it “seems like such a simple thing...like why wouldn’t we want to burn our trash to produce energy and save space in the landfill?” Now, she tells her family members, “hey, we should be using the regular (reusable) plates...we need to save our environment...seven pounds a day (average) is a lot of trash for one person!”

Upon defining the term *environmental education*, Leilani considers it as being aware of the environment we live in. Sometimes, she says, “we humans think that the world is ours” and that “we need to think more about how our actions affect all things on this planet.” To instill this sense of stewardship in her students, she sees herself as a teacher taking them on beach clean-ups and even clean-ups around the school.

When asked about connections to her own (Native Hawaiian) culture after having completed this environmental education course, she discussed the positive impact working in the taro patch at the Hawaii Nature Center in Makiki had on her. “That’s how my ancestors did it, and that was interesting to know about how things were grown in the past,” she stated. Speaking of plants and gardens, Leilani spoke fondly of her Chinese grandmother on her mother’s side, and how she had grown up helping in the garden. “When I was younger I used to help them (grandparents) rake leaves, pull weeds, and water the plants. They (grandparents) are the only ones who have encouraged me to learn about nature and the environment.”

Overall, Leilani’s experience in this ED 448 course had been a positive one, and she has become more aware of her environment and how she can bring science to the elementary classroom. “I never thought I was good at science,” she said, and “now I feel more prepared to teach it and help my students to understand and observe their surroundings.” In closing, she noted that she felt closer to her classmates by the end of the semester, because “we worked side by side and had to sweat together.”

**Implications of Research:**
From the field and classroom experiences of both cohorts for the Fall 2005 and Spring 2006 semesters at Chaminade University, in which 30 students (collectively) and I experienced environmental science over the 15 weeks in each term, it can be concluded that curriculum centered on place-based, hands-on, and relevant learning are assets to such a course on environmental education at the college level. It has been well documented that hands-on, meaningful, and action-oriented experiences can enhance student learning of environmental science at the elementary school through college levels (Arenas, 1999; Barnhardt & Kawagley, 2005; Ebbs, 2003; Feinstein, 2004; Hodson, 2003; Palmer, 2004; Settee, 2000; Sutherland & Dennick, 2002; Volk & Cheak, 2003; Wither, 2001). By allowing students to observe their surroundings, collect data, and make valid decisions concerning environmental issues affecting their communities, a greater sense of interest and ownership are developed in the process. If this change in thoughts and ideals and values has made a lasting impression on the students to the point of changing their actions and behaviors as well, then the transformative learning process is likely to be occurring.

What was also gathered from the field notes, student reflections, and my own reflections was that in order for science to be an interesting and engaging subject to teach and learn about, it needs to be connected to our immediate surroundings, and also be interconnected with the native/Indigenous culture that permeates the natural environment. Science taught in a way that studies and understands native ways of knowing (in this case the Native Hawaiian ways of knowing) can truly help students, be it young children, adolescents, or adults, to find their sense of place in the world.

Being that many of the students in this case study were not originally from Hawaii, and that many were not of Hawaiian ancestry, finding that sense of place in the Islands and going through such transformative learning processes was more difficult to accomplish, but it had still occurred for some of them through this course. The experiences for all of the students in the course allowed them to gain more confidence in teaching about the native Hawaiian environment and it helped them to gain a better understanding of, and respect for, how the Native Hawaiian culture is so closely interconnected with nature.
From this research it can be said that more studies need to be conducted in the Native Hawaiian context, with respect to learning and teaching about the natural environments of the Islands. Further research needs to be done at all levels of the educational system in the state of Hawaii: from the elementary school levels and up to the college levels. It is hoped that the issue of under representation of Native Hawaiian and Pacific Islander populations in the fields of science can eventually be corrected to show more of a “balance,” and that teachers in Hawaii’s elementary and secondary schools can help their students to connect to their natural environments and find their sense of place in this world today.

This case study with the two cohorts of students from Chaminade University will be continued for the next two years, to observe the effects of such a semester program (in place-based environmental education) on preservice teachers as they progress in the field of education, during their term of student-teaching and first-year teaching. Another important step in the buy-in of a curriculum that is centered on the conceptual framework of place-based education, is the implementation process. It is with hope that the continuation of this study of the two groups of cohorts as they progress in their careers as educators will aid in this critical area of teacher transformations and changes in curriculum.

On a personal note, my experiences as a participant-observer and instructor in the environmental course have allowed me to look within and find my own sense of place in this community. Student feedback and reflections have allowed me to further refine the place-based curriculum that I am intending to get across to these preservice teachers. The transformative learning process is an ongoing and evolving one for us all.

Validity/Reliability:
Limitations of this qualitative research were incurred due to the limited time of the course (15 weeks), and the time allotted to collect such detailed data over each semester (Fall 2005 and Spring 2006). This being a case study, one cannot generalize the experiences of the 30 students to the entire adult population in colleges across the state of Hawaii and other mainland colleges today. The cultural and socioeconomic backgrounds, and personal experiences of the students in both semesters of the ED 448 course were varied and representative of the population in Hawaii, and can therefore imply that similar experiences of finding that sense of place and
transformative learning processes would very likely occur in other groups of students at the college level in Hawaii.

In terms of reliability of this study, there may have been some biases in the answers given by the students for the interviews conducted. As the instructor of the course, I fell into the role of teacher, participant, and observer throughout each semester. During the interviews students may have been intimidated by my questioning, but it is hoped that much of their apprehension was relieved due to the fact that the classroom was set up to become a place of safety, comfort, unbiasedness, sharing, and authentic learning. Moreover, the questions used during the interview process were tested out on subjects not partaking in the course (colleagues, other students, family members) prior to using them for the selected nine students at the end of each semester.

Validity of results from this research can be attested through the method of triangulation, with a number of methods being employed to collect data for this research project (Cohen, Manion, & Morrison, 2000). Pre-/post-surveys were given, individual interviews were completed, student writing (reflections) were assessed, an e-mail survey was given, and field notes were taken on field trips to give this research detailed data with comprehensive qualitative descriptions for the 15 weeks of the course.

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The Economic Development of Small Islands:
Lessons from the 16th Century

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One of the key issues in Islands Studies today is the question of economic development: how can one develop islands that are small, have low populations, lack most conventional natural resources, and are often too far off the world's trade routes to be either economical to trade with or accessible for visitors? However, these issues are not new to the 21st Century. In fact, they were the very first issues that Europeans had to face as they began their voyages of exploration nearly six centuries ago.

While these voyages had many motives and many goals, losing money was not one of them; royal governments subsidized the voyages reluctantly, and expected their investment to be paid back literally with interest. And, since the first lands reached were islands, viz., Madeira, the Canaries, the Azores, the Cape Verdes and the islands of the Gulf of Guinea, it was island economic development that most concerned the governments involved.

This paper will look at two of these newly-found islands, describing how the European nation concerned, Portugal, attempted to make the islands economically viable in order to repay the costs of finding and settling them.
It will suggest how some of those strategies, now a half-millennium in the past, may hold lessons about islands' development today.

The two islands are Santiago, in the Cape Verdes, and Sao Tome, in the Gulf of Guinea. They were not the first Atlantic islands found by the Portuguese (Soeiro de Brito, 28); the Canaries had been reached and explored in the late 1200s, Madeira was discovered about 1420, and the islands of the Azores had been found, one by one, beginning in the 1430s; the discovery of the last of the latter group was nearly simultaneous with the discovery of the Cape Verdes and Sao Tome, all occurring the decade or so after 1460 (Duncan, ch. 2, passim). But what makes Santiago and Sao Tome interesting for our purposes is that, while neither was inhabited (which was also true of Madeira and the Azores), neither had the economic advantages of these other newly-found islands (Soeiro de Brito, 74). Madeira was a lush sub-tropical island, well-watered and wooded, with good soils (though a broken and elevated topography); the Azores were well-situated to support fishing and whaling as well as provide a decent agricultural base to eventual settlers (Barata, 926-27).

Santiago and Sao Tome, however, presented different and more difficult situations. The former, like all of the Cape Verdes, was arid, nearly a semi-desert (Duncan, 158). Soils were thin, rainfall inadequate, and harbors few. Sao Tome was a tropical, volcanic island with plentiful rainfall and deep volcanic soils (Tenreiro, 45-49). But the island was so rugged and so totally lacking in natural anchorages that clearing the land and importing or exporting anything was a monumental undertaking. In addition, neither island had a native population; since economic development required labor as well as natural or introduced resources, it meant that the acquisition and acculturation of labor would be an added cost that would offset any profit that the islands might provide.

Given the problems, why did the Portuguese Crown make the difficult and expensive attempt to develop Santiago and Sao Tome? The answer is three-fold:
first, the islands were on the prized sea-route to Asia; their development could support that all-important endeavor by providing a place where ships could call for repairs, supplies or protection (Duncan, 166-7). Second, developing the islands could provide cash income for the Crown, which had undertaken a vast operation with few resources. Portugal was one of the smaller, less-populous and poorer of Europe's kingdoms; the voyages of discovery had to pay off, sooner rather than later, if the "Enterprise of Asia" was to continue. Finally, Portugal knew that if she did not occupy and develop these islands, someone else most certainly would. That "someone" was Castile (not yet "Spain"), with whom Portugal had already been at war for nearly a century over its own independence, over inheritance of the various Iberian crowns, and -- most relevantly -- over ownership of the Canary Islands. For all these reasons, therefore, Portugal saw the settlement and development of the Atlantic islands as a national imperative.

II

The Cape Verdes were the least attractive islands of the Atlantic. Of the fifteen major islands, a dozen were simply too dry to support more than the barest human population and all the islands were uninhabited when the Portuguese found them (Barata, 929; Santos Pereira, 962-3). Of the remainder, only little Fogo had anything approaching fertile soil, and it was the rugged remnant of an extinct volcano (Duncan, 180). The rest had only scrub vegetation and none had a really suitable harbor (Ameal, 91). By default, Santiago, the largest of the Cape Verdes, with marginal soil and an equally marginal port, Ribeira Grande, became the focus of Portuguese efforts in the archipelago (Duncan, 168, 172-5).

But how could Santiago make money for the Crown? The answer was soon seen to be that old cliché about real estate: "location, location, location." Because of its position vis-à-vis the Atlantic winds, vis-à-vis the African coast about 100 miles away, and its shallow, open but wind-shielded harbor,
Santiago could become both a relief station for ships going to and/or from India and for ships carrying slaves from Africa to the West Indies (Soeiro de Brito, 82-3). Further, while crops on the island would be barely adequate to feed the local population, the scrub grasses could support goats and some cattle, whose meat, skins and hair would feed passing ships and provide a modest local product for external sale (Duncan, 168-71; Santos Pereira, 966-7).

In addition, the Portuguese introduced crops such as wheat, rice, grapes, figs, and melons. All of these grew only marginally well. In both quality and quantity, the crops could not profitably be shipped back to Portugal; passing ships were the only possible market, besides the minimal needs of the local, introduced population (Duncan, 172-3). That Santiago even had a population was unusual. The rest of the Cape Verde archipelago had only imported goats living on them until the mid-16th Century (Soeiro de Brito, 29, 72-3).

Even this modest level of development would require labor, and the nearby coast was its source. Control of the island had been vested in two Donitarios or grantees, who undertook development of the island on behalf of the Crown, which took a risk-free share of any profits (Soeiro de Brito, 76-80). The use of Donitarios to administer and develop new lands harks back to the feudal practice of giving newly-won lands to royal favorites to reward supporters without burdening the royal treasury, as well as having an experienced (or at least demonstrably-violent) and loyal subject take on the cost and burden of control and wealth-extraction, from which the Crown would get a large cut.

The roots of this were feudal and medieval, but the system is perfectly analogous to modern practices, variously called "franchising," "outsourcing," or "privatization." The receiver of the royal (or corporate) bounty got the opportunity to become rich, while the grantor, royal or corporate, was saved the burdens and costs of actually running a newly-acquired property but still stood to make a substantial sum if the enterprise succeeded; if it failed, the Crown/company lost little.
Each Santiagan Donitario ruled half the island, the Crown covering its bets in case one Donitario or one part of the island proved to be too incapable of effective development. Each was authorized to import labor from the near-by mainland (Duncan, ch. 9, passim). Relatively speaking, not a lot of labor would be needed, since the economic capabilities of the island were so limited. Unlike Sao Tome, most of the slaves on Santiago were intended for export instead of for labor on the island itself. Herding and household service, not field labor on plantations, was the lot of Santiagan slaves who were kept on the island. But the very lack of huge slave numbers betrayed Santiago's developmental limits; little labor was needed because little profitable economic activity could be expected (Barata, 928-9).

Still, the introduction of livestock proved to be a two-edged sword. Goats and cattle provided meat and hides for ships and local inhabitants. They also virtually destroyed the marginal soil with their constant grazing. Like sugar on Sao Tome, introduced animals proved to be a short-term and literally wasting asset on an island that nature had essentially designed to be left alone by humans.

III

Physically, Sao Tome was in every way different from, and better off than, Santiago. The landscape was lush and fertile, rain almost too-plentiful, and while a true harbor was lacking, the shallow Bay of Ana Chaves could be used as a port by lightering cargo to and from ships in shallow-draft barges.

But like Santiago, the central problem restricting development was lack of labor, and as with the first island, slaves from the nearby African mainland were quickly introduced; the first record of slave importation on Sao Tome dates from the late 1490s. Unlike Santiago, however, Portugal had recourse to other labor sources for Sao Tome. By emptying Lisbon's jails, sweeping prostitutes
and petty criminals off Lisbon's streets, and by seizing and forcibly converting
the children of refugee Castilian Jews, the Portuguese Crown gave Sao Tome a
much larger early labor supply, as well as a culturally more varied population
out of which a new society and economic development would be created. Like
Santiago, Sao Tome also was granted to a Donitario, who would be responsible for
the island's settlement and economic development (Tenreiro, 57-66).

But what could Sao Tome produce that would give its Donitario, and the
King, a satisfactory income? Wheat was tried, since bread could be sold to
passing ships going to or from India. That failed, as wheat did not thrive in
the climate and the nature of the local winds made it better for ships to bypass
the island. Grapevines were tried, but the yield was small and the wine of low
quality. By about 1520, some thirty years after settlement and fifty years
after discovery, Sao Tome still had at best a marginal value to Portugal and to
its Donitario. It was, in a sense, a very lush Santiago.

Then, about 1520, plantations were established in the West Indies. With
the near-extinction of native Indian populations, labor on these plantations
was desperately needed; in effect, there was an energy shortage, since human
muscle, supplemented where possible by animal power, was the major source of
energy for economic development anywhere in the world before the Industrial
Revolution. It turned out that Sao Tome was ideally situated to supply this
need. While winds for India-bound ships were problematic near the island, they
were ideal for voyages to the African coast where slaves could readily be
bought. The winds were also ideal for ships sailing westward from Sao Tome to
the West Indies and, later, to Brazil, where the demands for slave labor were
constant and growing.

As utterly abhorrent as it is to modern sensibilities, slave labor was,
truth be told, the petroleum of the 16th Century Atlantic. Any place that could
provide it or, like Sao Tome, organize and expedite its supply, would prosper
immensely and the island did. Since it did not export many of its own slaves,
those being needed for its own plantations, Sao Tome more resembled a modern Singapore or Bahrain rather than a Kuwait; it was the middleman/fixer/aggregator of a key international commodity, the demand for which was seemingly inexhaustible.

But Sao Tome had another source of economic potential. Its equatorial climate and deep volcanic soils (at least in the northern third of the island where the ground was flat, even if covered in rainforest) were found to be ideal for growing sugar. In those centuries, sugar was of immense value with a limitless European market; Madeira's early prosperity was due to the crop. But Sao Tome, with a more suitable climate and topography and barely 100 miles from its "energy source," the slave marts of the African mainland, soon far surpassed Madeiran sugar production and indeed effectively killed it by the 1530s. By the 1560s, Sao Tome was the greatest supplier of sugar in the world, the wealth of the island enormous, and the plantation owners rich men.

It did not take very long for the Portuguese Crown to see how this was going. As early as 1524, it abolished the Sao Tome donitaria and took over direct control of the island through a royal governor. That is, the franchise was revoked, the middleman eliminated, and corporate headquarters decided to increase its profits and its control by running the business itself. For nearly a century, until eclipsed by the far greater sugar output of Brazil, Sao Tome prospered (Tenreiro, 67-74).

What did not happen, however, was reinvestment of profit for the purpose of continued economic growth. Sugar was the capital-generator of 16th Century Sao Tome, and when its market was lost to Brazil, there was nothing to take its place as a resource or as a source of capital. Indeed, in an early example of capital-flight, those who still had money, either from sugar or the slave trade, decamped to Brazil, leaving the island bereft of wealth, talent or entrepreneurs. Even the gruesome slave trade began to bypass Sao Tome, as former islanders in Brazil used their local knowledge to import slaves directly
from the African mainland, cutting the island out of the process completely. As with Santiago, Sao Tome's marginality and precarious existence as a disposable middleman eventually caught up with it, leaving economic ruin and social stagnation in its wake.

IV

What lessons might be learned by modern-day islands seeking economic development from the history of Santiago and Sao Tome? First, it must be recognized that islands, by their very nature, are generally marginal to the world economy, unless like Sao Tome, temporarily, in the 16th Century, they naturally have or can produce a commodity that is vital to world trade.

Second, location is important, perhaps crucial. Santiago enjoyed what small prosperity it had, indeed was only settled at all, because its location made it idea for trans-Atlantic and Europe-India trade. It was, in a sense, the Singapore of the 16th Century Atlantic. Like Singapore, Santiago did try to be more than just an entrepot, and to develop local products with off-island market potential. But this effort failed, defeated not by the island's location but by its ecology, for which the 16th Century had no technological fix.

Third, small islands are utterly dependent on political and economic decisions made elsewhere, decisions that are made with the needs and interest of the islands and their populations as a secondary or even tertiary consideration. The Portuguese Crown put time, effort and money into Santiago and Sao Tome as long as the prospect of profit existed. When it became clear that no such prospect really existed (in the case of Santiago) or had run its course (in the case of Sao Tome), the external controlling power effectively abandoned the islands and left their inhabitants to their own devices.

Ultimately, it is the fate of small islands to live and die by and for the needs and whims of others. Changing technologies of transportation and
communication, changing markets and consumer tastes, or new products or alternate availability of old ones, all can leave even the most seemingly-prosperous of small islands dangerously vulnerable to economic marginalization and disaster. The fates of Santiago and Sao Tome are not pleasant to behold, and the lessons they teach may be depressing, but they are examples worth studying for those trying to sustain and develop small islands in our own day, nearly 400 years after the histories of Santiago and Sao Tome reached their sad conclusion.
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Island of the World IX Conference

“SUSTAINABLE ISLANDS – SUSTAINABLE STRATEGIES”

31 July to 2 August, 2006
Maui, Hawaii

Community Visioning: A strategy for Sustainable Island Living?

Tiare Holm
Palau Conservation Society

The Republic of Palau
The Republic of Palau is a group of more than 500 islands located in the tropical western Pacific Ocean – the most western of the Caroline Islands group, and is part of the sub-region known as Micronesia. Composed of two primary sets of islands, the Main Palau Islands extend from 6°53’ to 8°12’ N and from 134°08’ to 134°44’ E while the Southwest Islands are located up to 600 km from the main islands and are at 2°59’ N to 5°21’N and from 131°49’ to 132°13’E. Palau is relatively close to Southeast Asia, especially the Philippines and Indonesia, and as a result shares some of the flora and fauna of Southeast Asia that has not dispersed through the rest of the Micronesian islands. For instance, Palau is the easternmost extent of the range for saltwater crocodiles and dugong in the region.

Most well-renown for its spectacular marine environment, Palau shelters the most diverse forests in Micronesia. An estimated 80% of Palau’s big island of Babeldaob (Micronesia’s second largest island) is covered in native forest, including upland, mangrove, swamp, limestone, Rock Island, agro-forest, plantation and palm forest. These forests provide habitat for many unique animals and help to maintain the nation’s freshwater supply; this forest cover is also crucial to maintaining the nutrient balance that flows into the pristine marine environment.

Of Palau’s 1260 species of plants, 25% are believed to be endemic to Palau. Animal endemism is also high. Palau has an estimated 3,000-6,000 terrestrial insect species, with a 26% endemism rate. There are 46 species of reptiles and amphibians in Palau, with 1 known endemic frog, 9 endemic lizards, and 2 endemic snakes. The forests are home to 40-50 documented species of native lands snails, however many more remain undocumented.

The total population of Palau is roughly 20,000 with the majority of the population (just over 13,000) indigenous Palauans. Traditionally and politically, Palau is made up of 16 states. Each state’s governance structure includes traditional leadership, a Governor and state legislature. Historically, Palau underwent a century of foreign administration before gaining independence in the mid-1990s and was the center of Japan’s Pacific administration just prior to, and during, WWII. Today, Palau’s economy, largely subsistence (with an emphasis on hunting, fishing, gathering and farming mainly taro, cassava and fruits), is also based in tourism, fisheries and agriculture, and, substantially driven by the revenues resulting from a treaty known as the Compact of Free Association (COFA) with the United States. The terms of the COFA treaty, entered into in 1994 when Palau obtained sovereignty, are up for renegotiation in 2009 and include the construction of a 52 mile circumferential road on Babeldaob Island. This road is commonly referred to as the "Compact Road". The construction of the Compact Road, the
largest development project in the history of Micronesia, has opened Micronesia’s largest and most biodiverse, pristine, contiguous forest to ready access, whereas before only coastal areas were accessible by boat. In addition, the national Capitol, currently placed in Koror (a group of small islands off the southern coast of Babeldaob), will be relocated to Babeldaob by 2007.

The combined completion of the Compact Road and the relocation of the national capitol will lead to what many expect to be significant environmental and demographic changes. Already, large development projects have been proposed for Babeldaob that include a free trade zone, mega-resorts, golf courses, and numerous quarries and dredge sites. No comprehensive land use planning has taken place yet in Palau, however most States and the national government leadership consider competent land-use planning to be critical at this time. Previous efforts to initiate land use planning were initiated by State and National governments with limited participation from communities. While they did lead to the development of land use constraint maps, these efforts did not lead successfully to full competent land use planning.

Palau is ingrained with a traditional sense of conservation, enforced by chiefs and practiced by all traditional residents. Even in today’s modern, fast-paced, multi-sectoral culture, conservation remains important, and communities in general remain committed to balancing their development needs with maintaining a sustainable resource base. A variety of protected areas have been established and are being managed by communities and states, with some national support, as a strategy for ensuring sustainable use of biodiversity and resources. To date there are 30 protected areas established and an additional 8 have been proposed. About 17% of Palau’s terrestrial areas and 20% of Palau’s near-shore marine areas are currently sustainably managed through some kind of protected area status. The community-driven and national momentum towards conservation and sustainable development has led Palau to set two major conservation goals. The first major goal is the establishment of a national Protected Areas Network (PAN), for which legislation was passed in 2003 to establish a framework. The second goal is the effective conservation of 20% terrestrial areas and 30% near-shore marine areas of Palau, which has in turn led to other Micronesia nations making similar commitments, now known internationally as the "Micronesian Challenge".

It is widely recognized that communities have the desire to protect their resources, but lack many of the specific skills, tools and information to do so. Over the past decade, the Palau Conservation Society (PCS) has worked to link communities with many of the technical skills, tools and information they need to manage resources and biodiversity sustainably. Education and awareness, along with capacity-building, activities have played a major role, and it is fair to say that most communities in Palau are now aware of the benefits of well-planned development that include planning for conserving important habitats and ecosystem functions. It is further commonly noted that land-use planning and the effective design, implementation and management of the Palau PAN will be mutually important. National efforts to gain the resources needed to both undertake land-use planning and to effectively implement a well-designed PAN are ongoing and fervent. Both are expected to be well underway by 2008. In addition, the nation has recently begun working towards developing a National Sustainable Development Strategy, a national level action that was called for by Small Island Developing States (SIDS) during the International Meeting to Review the Barbados Program of Action (BPOA) held in Mauritius in 2005.

The importance of community participation and vision in national planning processes has been widely recognized. The Palau Conservation Society has implemented numerous programs that build on existing community awareness and assist with the effective planning and implementation of conservation areas and resource-use planning initiatives, at the community level. Over the last three years, these programs have included a community visioning initiative. Community visioning has been recognized as a potential model for island communities around the world to play an active role in land use planning as well as other national planning processes.
Community Visioning Initiative
The Palau Community Visioning Initiative is aimed at empowering communities, at the grassroots level, to actively participate in making decisions about their future and their lands. The initiative brings together community members from across the broad range of sectors to discuss and agree on a common vision for the development of their community, based on common core values. These discussions take place in the form of community focus groups, community meetings, and individual discussions with state, traditional and opinion leaders. Community visioning in Palau has begun with identifying and training a pool of community facilitators. These facilitators, with occasional support from community facilitators from neighboring communities and PCS staff, then facilitate community members through a process of identifying common core values, aspirations and fears, which eventually form the basis for a community’s vision statement.

The initiative uses innovative methods to catalyze ideas and dialogue, engage communities in the process of decision-making and strategically plan for the future. One example is the development of community vision photo-murals – an activity that was inspired by the Molokai and Oahu experiences. In two Palauan communities, cameras were distributed to 50 families each who were asked to photograph images of characteristics of their community that they love and are not willing to accept losing. Families were also asked to capture images of elements of their communities that they would like to improve. These photos were then used to build community vision photomurals to visually capture a peek into each respective community’s vision. While innovative, the methods used are also linked to traditional socio-cultural protocols and practices. In many cases, contemporary facilitation methods and tools (such as ground rules, brainstorming and clustering, flip-charts and PowerPoint presentations) are forgone and instead replaced by, or synergized with, traditional approaches to facilitation and discussion.

The community visioning process tends to synergize well with the traditional decision-making process whereby traditional leaders articulate decisions that have been made through extensive community consultation and often through consensus.

Tools and benchmarks such as land-use planning and zoning, marine resource use planning and conservation areas, and specific projects (such as community cultural centers, eco-trails, aquaculture projects, etc.) then become part of a community strategic plan for moving toward a common vision. Activities in Palau so far have focused on building awareness, understanding and support for the community visioning concepts and process, training of community-based facilitators to guide communities through the process, and the formal establishment of Community Visioning core-groups representing all sectors of each community. To date, Communities throughout Palau are coming together to share ideas and decide on common values, in every area of life (including environment, development, education, economy, etc.). Together, they are working to formulate long-term goals, based on shared values, which serve as the actual community vision statement. While PCS has supported the process, the actual formation of the vision statements are being facilitated by the facilitators who are based in each community and have been trained in group management, conflict resolution, brainstorming, and other planning methods.

The Process
The Community Visioning process is much like any other strategic planning process. It can be extremely tedious and challenging at times and requires enthusiastic and committed individuals to drive the process. The process in Palau has also required commitment from every level (local, state and national) and sector of society.

The concept of Community Visioning was introduced to Palau in 2001, after the Palau Association of Governors visited Hawaii for a leadership meeting and was introduced to the process. At that time the Chairman of the Association was very supportive of community
visioning and a national workshop was implemented to acquaint Palau with a community visioning process that was successfully implemented on the islands Molokai and Oahu. The Molokai and Oahu experience inspired many individuals in Palau to take steps to move community visioning forward. For about one year following, the process was pursued by various groups and states in Palau. Unfortunately however, although generally supported by community members and leaders, community visioning in Palau waned after changes in state leadership, mainly because no one was specifically tasked and supported to carry the process forward. In late 2003, the Palau Conservation Society, in Partnership with UNESCO Small Islands’ Voice, picked up the process and identified staff specifically tasked to coordinate the Community Visioning Initiative. Since then, the initiative has attracted interest and support from other partners as well, including Mobil Oil Micronesia, who now helps to sponsor the implementation of the Community Visioning Initiative in Palau.

Developing the vision statement is just the first step in the community visioning process. The next step involves conducting a community assessment to collect needed information about natural and socio-economic environments, and also determine strengths and challenges facing each respective community. The community assessment process helps communities decide on what their needs are and gain perspective on the difference between their community’s true long-term aspirations and temporary desires that are often driven by outside influences.

The third step of the process is Strategic Planning, whereby communities set objectives for development and benchmarks for success. They also develop specific action plans and projects needed to achieve their visions.

The final and most important step will be the implementation of Community Strategic plans for which PCS is working with partners to investigate opportunities to assist communities and states with the implementation of their strategic plans. One example of an opportunity to assist communities is presented through the Global Environmental Fund Small Grants Program (GEF SGP) which provides small grants of up to $50,000 to community based organizations for the implementation of projects that lead to environmental stewardship, community empowerment and poverty alleviation. Community visioning has been identified in the GEF SGP Palau Country Program Strategy as an important foundation and starting point for planning and implementing successful community-based projects.

Other opportunities are also available, however, a key obstacle to accessing these opportunities has been the capacity at the community level to take ideas and turn them into clear and attractive project proposals, and then to implement, manage and report on projects effectively. As a result of this realization, PCS has begun to implement a series of workshops on project proposal development, management and reporting (both programmatic and financial). These workshops are targeted specifically at community-based organizations (CBOs) and are being implemented to complement the visioning process. CBOs and their project ideas are linked directly to funding opportunities and each participant leaves the workshops with a proposal in hand (that they themselves have written) and a funding opportunity to which to submit it. If their projects are successfully supported, CBOs will also be mentored in project management and reporting throughout project implementation.

Lessons
Community visioning (CV) continues to be a learning tool and process for everyone involved. It is very important to adapt this kind of a process to the local needs and contexts. Therefore, throughout the CV process we are constantly learning, adapting and learning more. While there are many still to be learned, lessons thus far from the Palau experience include:
1. **A "Champion (s)" for the process is essential.** An effective CV process needs strong, optimistic, and consistent support to coordinators, community facilitators and core-groups, as well as a respected "voice" and "face" for the process.

2. **The process is best driven internally – through core groups of community facilitators.** The CV process can seem overwhelming and tedious. It is most effective when it is introduced to leaders and promoted by community members themselves. It is best to have a team of community members who can support one another in the facilitation and communications activities. This core group then forms the internal driving force for the process.

3. **Everyone involved in coordination and facilitation of the process needs to be on the same page.** In order for the CV process to proceed smoothly and effectively, there needs to be clarity and agreement on the process from all coordinators, facilitators and core-group members.

4. **Get "blessings" from key leaders and open participation to everyone as soon as possible.** In order for the process to be accepted and implemented, there is the need to get the approval or “blessings” of key state and traditional leaders. All community sectors and levels of leadership (traditional, state, and national) need to be involved as soon as possible.

5. **Go with the community’s pace and momentum.** In order for the CV process to be truly community driven, there is the need to recognize the community’s own pace and priorities and not to force the timing of the CV process. Patience is essential.

6. **Synergize with community’s existing processes and planning.** Communities are more and more often feeling overwhelmed with the plethora of programs, projects and planning initiatives in which they are asked to participate. To prevent the CV process from becoming perceived as more of a burden than an opportunity, there is the need to synergize the process with traditional governance and practices as well as ongoing community planning activities (such as state master-planning, national sustainable development strategies, conservation areas planning, etc.)

Some positive outcomes to date have included:

1. A national "buzz" about the importance of having a common vision seems to have emerged. National and state leaders are emphasizing the need for "vision" and are utilizing concepts from the community visioning process more and more often. The concepts are being used more often in community and leadership dialogues, such as those currently underway to discuss land use and the possibility of amending the national laws and constitution to allow for 99-year leases of public and private lands.

2. Communities and states are proactively requesting the community visioning process as a foundation and a way forward for land-use planning, planning for conservation areas and state master-planning.

3. Core groups of community facilitators have been formally established in communities and states, which has led to significantly increased community-based skills in group facilitation and collaboration. These groups are often established through state resolution and therefore have the sanction of their state leadership to move forward.

**Conclusion**

Palau, home to a globally unique and important natural environment as well as to communities steeped in cultural richness and growing diversity, is at a critical cross-road in its national development. There is no shortage of national and state plans in Palau. There are many plans that have been developed over the last decade with the intention of guiding our nation’s development. The vast majority of these plans are not effectively used, implemented or even revisited for revisions. All of these plans have been developed at a great expense to Palau’s
communities and their partners, but with very limited community participation. External consultants are often contracted at significant sums to develop these plans according to very restricted time frames that may or may not meet the communities’ needs.

Although there are a variety of national and state plans, Palau has yet to undergo competent land-use planning. With the great changes expected in the near and long term future as a result of the completion of the Compact Road and the relocation of the National Capitol, combined with the goals of the Palau PAN and the Micronesia Challenge, it is particularly important that Palau ensures competent land-use planning that is grounded in an agreed national, but community-driven, vision. All communities in Palau are committed to wise planning and sustainability. Community visioning presents the opportunity for all community members and sectors to agree to a common vision for their community and nation, based on common core values.

The hope for the community visioning process is that it will provide each community member in Palau with the opportunity to link their personal core values and visions for their family and community with that of their state and nation. It is hoped that at the end of the day the Republic of Palau will be implementing plans for sustainable development at the community through national levels that are not driven externally, but driven by the people and communities of Palau. In the development process, our vision is the destination, our leaders are our steersmen and our communities are the navigators, each ideally equipped with a strategy or plan that everyone has agreed to and that serves as a map towards reaching our vision – our destination.
WILL DRAMATIC CHANGES IN COOK ISLANDS LAND TENURE LEAD TO MAJOR SOCIAL CHANGE?

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BACKGROUND

In ancient times, traditional leaders gathered at the *koutu* or meeting place in Rangiatea named Tarairangi to discuss local issues. The top level of the hierarchy of traditional leaders in Rarotonga consists of the *ariki* (paramount chiefs). Three *vaka* or districts developed in Rarotonga named Takitumu, Puaikura and Te Au o Tonga, and there are respectively two, one and three paramount chiefs in each. The next level in the hierarchy are the *mataiapo* chiefs, some of whom are subservient to the *ariki*, while others are *"mataiapo tutara"* or independent chiefs who are not answerable to an *ariki* for their lands or titles. They had to be persuaded to lend support to an *ariki*, and often earned their lands and titles by performing a highly valued service to the *ariki* in time of war. The third level of traditional leaders are the *rangatira*, who are subservient to either an *ariki* or a *mataiapo*. They were
often drawn from the clans descended from the younger siblings of the ariki or mataiapo.

The mataiapo acted as chairperson of the clan meetings to settle disputes over occupation of lands. The lands of each clan were allocated in triangular wedges, narrow at the mountain and wider towards the coast. The people lived in the inland valleys but built shelters near the beach for fishing trips and recreation. In the Takitumu district of Rarotonga, they also belonged to a larger traditional body known as "Te Puara o Takitumu", which could be convened by either of the two paramount chiefs, namely Pa Ariki or Kainuku Ariki. The ariki and mataiapo consulted with their clans regarding work to improve the community or to create public amenities. They were also expected to do all they could to maintain the "mana" or prestige of their clan and their vaka, and were expected to act as good role models. Despite the arrival of some traders and seamen, Rarotonga and the rest of the Cook Islands maintained this system of traditional governance until the arrival of English missionaries from the London Missionary Society in 1823. The women in particular were keen to embrace the message of peace brought by the missionaries, and the Christian belief that women were equal to men in the eyes of God. Perhaps because of this, and due to the resistance of many male chiefs to Christianity, it was only after the arrival of the missionaries that women were permitted to hold the titles of traditional leaders.

MODERN HISTORY
At the turn of the century, word came to Tepaeru Ariki in Rarotonga that the French were on their way to annex the Cook Islands. She had a Union Jack flag sewn hastily and run up, and the French passed by without incident. In 1901, the fifteen islands in the Cook Islands group were annexed to the Dominion of New Zealand. We were fortunate in that the Minister for Maori Affairs in NZ at the time was Apirana Ngata, later knighted. He had seen the effect of alienation of indigenous lands in Aotearoa or NZ and took steps to ensure that the same did not happen in the Cook Islands. A systematic survey of each of the islands was carried out over the next ten years, and the lands were assigned an indigenous name and alphanumeric number.

The Cook Islands Act 1915 contained provisions that prevented outright sale of the land. Instead, a system of leasing for up to 99 years was introduced, later reduced to a maximum of 60 years. This Act required that the majority of landowners had to consent to the lease. There were also other provisions by which individuals could obtain an occupation right, which enabled them to define specific areas for their own individual use, as opposed to commonly held land. Under this new introduced system, disputes regarding land were heard in the newly-established Land Court, presided over by circuit judges from NZ.
In the early part of the century, these judges took considerable care to ensure that as much evidence as possible was obtained and recorded in the Minutes of the Land Court. Of special note was Judge Jack Morgan. These Minute Books form a priceless archive of the history of land tenure and the genealogies that are the key to inheriting ancestral lands. It is now generally accepted that the ruling families in the period 1901 to 1920 ensured that they were well entrenched, sometimes at the expense of the true landowners. Because of the number of unresolved grievances, in 1938 the Land Court, for a period of only 12 months, allowed petitioners to apply for investigation of lands to be reopened. Several, but by no means all, ongoing disputes were resolved as a result of this reinvestigation. By 1960, it was clear that the Land Court had replaced the ariki and mataiapo with regard to distribution of rights to occupy land.

In the early 1960s, rather than full independence, Cook Islanders chose internal self government in free association with NZ. Effectively, this meant that NZ would see to defence and foreign relations matters, while a democratically elected Cook Islands Parliament would govern in all other matters. The Land Court system governing land tenure did not change.

In 1965 the first Cook Islands government was sworn in, ending the interim phase of the Legislative Assembly. The role of the traditional leaders was eroded even further by this introduction of parliamentary democracy, as the Members of Parliament together with their supporters assumed responsibility for community matters within their constituencies. Although the traditional leaders were still consulted as a courtesy, they became more of a figurehead, with the Ministry of Works carrying out local body works and community projects.

In 1971, the government of Albert Henry, who was the first Premier of the Cook Islands and who was later knighted, passed the House of Ariki Act. This formally recognised the top level of chiefs i.e. the ariki and created a new national body called the House of Ariki. At the same time, a new national body called the Koutu Nui was established for the chiefs, that is the mataiapo and the rangatira. Prior to that, there were koutu or courts of traditional leaders in each vaka on Rarotonga, and in the Outer Islands. It was considered by many at the time to be an artificial creation, and not all title holders have opted to join it. However, its current members believe that it is a unifying national body with an important role.

Definition of what constitutes Maori custom has proved a very thorny area for circuit judges, who have repeatedly asked the House of Ariki and the Koutu Nui for guidelines. In response, the Koutu Nui has drawn up guidelines for Rarotonga that effectively codify custom while allowing for differences between individual clans and districts and these have been tabled at the Cook Islands Parliament. It is expected that each individual island will produce similar
guidelines, which could be attached progressively as appendices to the proposed Act as they are completed.

Misgivings have been expressed that codifying Maori custom in this way would fix Maori custom at a determined point. It is felt that since culture is constantly evolving, these guidelines could prove restrictive. However, it is felt that by traditional leaders in the Koutu Nui that the time has come to set down in writing what the generally accepted customs are, before they are lost or changed to suit the aims of individuals. Aside from assisting the circuit judges in their deliberations, these guidelines also provide a record for future generations of Cook Islanders. They are seen as a starting point, rather than the end point of the process.

The 1994-95 amendment to the Cook Islands Constitution Act 1972 contained a provision providing that account should be taken of the opinion of the aronga mana, a term which comprises all three levels of traditional leaders. This could prove to be a powerful provision if the traditional leaders ever put it to the test.

In 2004, the Cook Islands Government introduced the Unit Titles Bill, which permitted individual floors of a building to be leased and sold separately, with provision for common usage areas such as parking areas, lobbies and stairwells. Prior to this, any buildings were owned by the same entity. While this would be unremarkable in other countries, for the Cook Islands it was the biggest proposed change to land tenure in more than 100 years, in that it allowed passive investment by foreigners. A Parliamentary Subcommittee was formed to receive submissions, whether written or verbal, on the Unit Titles Bill, and consultative meetings were held in the Outer Islands at an early stage. However, there were no meetings held on the capital island of Rarotonga until August 2005. It was clear from the outset that the government of the day was determined to get this Bill passed, in order to allow completion of the Vaimanga Hotel project which had laid dormant for some 10 years. Initially, the Bill was restricted to land on which this uncompleted hotel stands, and to land in Aitutaki (the second most developed island) where it was planned to build a sister hotel.

There was a groundswell of concern, and it was put on the agenda for the annual forum of traditional leaders, when representatives from the Outer Islands are brought to Rarotonga. Members of Parliament were asked to make presentations to this forum, and answer questions. Many participants were unaware that this kind of legislation overseas has resulted in high-rise buildings on prime coastal land, and they became increasingly uneasy. For the first time, they realized the increased need for water and waste management that would result from more high-density development. Some of the Outer Island participants queried whether this Act they were hearing about now was the same one that a parliamentary group had introduced on their home island some weeks earlier.
A workshop on leadership was held concurrently with the traditional leaders forum, where there was vigorous discussion about what to do if leaders felt that their voice was not being heard. Participants were made aware of the usefulness of Section 66A of the Constitution. There were also other suggestions about making use of radio and television interviews, and print media. After the traditional leaders forum ended, the Outer Islands participants took what they had learnt to their home islands. A petition in opposition to the Unit Titles Bill was started in Aitutaki (the second most developed island), and other islands soon obtained copies and signatures. More interest was roused, and radio talkback discussions were broadcast from Rarotonga, that were heard in all the other islands. Many called for the Unit Titles Bill to be deferred, until more meetings could be held.

In the end, the Act was passed by Parliament in September 2005 but some significant changes had been made to it: leasehold, rather than freehold, tenure was retained for property under the Unit Titles Act; a height restriction was inserted; existing leases could not be transferred to the new system but had to be renegotiated with the landowners. Two of the more developed islands, Aitutaki and Mauke, did not want the Act to apply to their island, and this still holds today. Since the Act passed, two developers are registered their properties under the Unit Titles Act. Aitutaki has seen continuing rapid development and is likely to become the testing ground for the Unit Titles Act because of frequent water shortages.

At the time when the Unit Titles Act was being promoted, it was known that other legislation relating to the Leases Approval Tribunal and the Property Law Act would need to changed, to facilitate the Unit Titles Act. Some submissions called for all the legislative to be presented as a package, so that the overall effects could be considered. This was apparently not feasible.

The Property Law Amendment Bill, which relates to changes in the law for leases, was introduced in 2006 and a Parliamentary Subcommittee was charged with the task of consulting with the communities. In marked contrast to the promotion of the Unit Titles Act, a very low-key approach was adopted. There have been no consultative meetings held in the Outer Islands. The Parliamentary Subcommittee has sat for 10 days over a 5-month period, and received 11 written submissions and 8 verbal submissions.

The important change proposed by this amendment to the Property Law Act is that landowners would receive a percentage of the gross annual turnover from businesses situated on leasehold land. There is also a provision for a percentage of the sale proceeds when the business is sold. In theory then, a landowner has four opportunities to benefit from the negotiation of a lease:

(a) a consideration when the lease is entered into;
(b) annual ground rent payments;
© a percentage of the gross annual turnover; and
(d) a percentage of the sale proceeds when the business is sold.

Landowners who have made submissions are in the minority; most submissions have come from institutions or the business sector. Not surprisingly, the majority of submissions argued that the new lease requirements would make many businesses unviable. Most submissions called for deferral of the Property Law Amendment Bill, or its indefinite deferral. Only one or two submissions recognized that the proposed payments to landowners were to be regarded as part of the cost of doing business.

CONCLUSION

Land tenure is inextricably linked to culture and the traditional chief system. Since colonial times, the role of the traditional chiefs in the Cook Islands in relation to land tenure has been reduced. Traditional leaders have chosen to forge a new role for themselves as custodians of culture.

While the full impact of the Unit Titles Act 2004 has not yet been felt, observers feel that it was passed for the benefit of non-residents, who may now become passive investors in Cook Islands real estate. Concerns have been expressed about the strain it will put on the infrastructure, particularly with regard to water and waste management.

The Property Law Amendment Bill, which was supposed to counteract the effects of the Unit Titles Act by sharing some of the economic benefits of development among landowners, has received very little promotion by contrast with the Unit Titles Act. There is little grasp by landowners of the significance of the proposed amendment to the Property Law Act, and Guiding Principle 3 of the Draft National Sustainable Development Plan (contained in Appendix B) relating to social harmony is being disregarded.

Demographic changes in large neighbour countries mean that more retirees will be looking for a place in the sun. Meanwhile working-age Cook Islanders continue to migrate. If things continue on their present track, it is likely that Cook Islands maori landowners will, in the future, become a minority in their own land. The traditional leaders of the Cook Islands need to adapt to the changed land tenure by promoting the Bill currently under consideration, and influencing other legislation likely to be introduced with regard to land tenure.

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APPENDIX A

EXTRACT FROM DRAFT COOK ISLANDS NATIONAL SUSTAINABLE DEVELOPMENT PLAN (incomplete)

SETTING THE SCENE FOR THE SUSTAINABLE DEVELOPMENT OF THE COOK ISLANDS

THE CONTEXT

The Cook Islands is a unique small island developing state in the Pacific. It is an independent island nation comprising 15 islands, which cover a total land area of 240 sq. km and are scattered across an Exclusive Economic Zone (EEZ) of 2 million sq. km. In 1965, the Cook Islands exercised its right to self-determination and entered into a relationship of free association with New Zealand.

Its relatively unspoilt natural environment, combined with its vibrant Cook Island Maori culture and tradition and the friendliness of its people, has been a major attraction for foreign tourists from Europe and North America, as well as the traditional tourist markets of New Zealand and Australia. The economy is based primarily on the tourism industry, which generates receipts of about 40 percent of gross domestic product (GDP), or around $120 million, annually. Tourism also contributes significantly to a number of other industries, including retail trade, agricultural production for the domestic market and construction activity. The other major export industries are offshore financial services, the offshore tuna fisheries and the black pearl industry, with the latter two together generating about 5 percent of GDP annually.

The Cook Islands has one of the better performing private sector led economies in the region following implementation of targeted economic reforms. The economy is, however, based on a few industries and is highly susceptible to external fluctuations. The pearl industry in particular has experienced large fluctuations and more recently, a downward decline in its gross value due to increases in international supply along with the declining quality of Cook Island pearls caused by poor water quality in pearl farming areas. The industry was once valued at $18 million prior to 2002 but has declined to its current level of about $2-3 million annually. The offshore tuna fishing industry, based on distant water fishing fleets, is influenced by the health of the regional tuna stock as well as the migration of tuna through the Cook Islands EEZ. The migratory pattern of tuna is influenced by sea surface water temperatures, which is subject to the effects of climate change and associated El Nino and La Nina events.

The Cook Islands has limited scope to expand or diversify its economic base although there may be potential for deep sea mining of manganese nodules. The potential for
agricultural development to expand has been restricted due to, amongst other things, limited market access, the high costs of local production combined with high shipping costs and competition from international producers. The Cook Islands, as do other small and isolated Pacific island economies, face an uphill struggle in developing a comparative advantage in agricultural and other natural resource based commodities due to high transport and production costs. Nevertheless, there is significant agricultural production for the local and tourist market, and there is some potential to expand this further.

The Cook Islands is a signatory to the Pacific Islands Trade Agreement (PICTA) and the Pacific Agreement on Closer Economic Relations (PACER). These regional agreements, while offering opportunities for market expansion, may result in further erosion of traditional export markets and reduced competitiveness for domestic industries engaged in import substitution if the Cook Islands fails to strengthen its economic competitiveness. In 2000, the Cook Islands joined with the members of the African Caribbean Pacific (ACP) region in signing the Cotonou Agreements with the European Union. The Cotonou Agreement provides for the negotiation of new trading arrangements in the form of Economic Partnership Agreements between the ACP region and the EU. These new trading arrangements, which will span 20 years, will come into force in January 2008. The Cook Islands is participating actively in these negotiations to ensure that benefits are secured for the country into the future.

The country is also highly vulnerable to natural disasters, which is expected to not only increase in frequency but also intensity due to climate change effects. In 2005, five cyclones in a span of two months caused over $10 million worth of damage. Such incidences, no doubt, undermine the country’s resilience to natural and man made forces and require sound and effective preparedness, mitigating as well as response, strategies.

With the country’s unique political and cultural relationship with New Zealand, Cook Island citizens have unrestricted migratory access to these countries. The continued economic prosperity of the country is highly dependent on the impact of the outward migration of Cook Islanders to New Zealand and Australia. The free movement of skilled and unskilled labour, together with a net migration of outer islanders into Rarotonga, poses particular challenges for national and outer island development. More importantly, policies that make it more attractive to remain in the Cook Islands need to be maintained and enhanced.

The large Cook Islands population residing in New Zealand, and elsewhere, and their strong family ties back in the Cook Islands, could also provide a solid foundation for building stronger economic partnerships between local and ‘expatriate’ Cook Islanders. These partnerships could be mobilized to promote private sector led developments in the Cook Islands.

The Cook Islands operates on a Westminster Parliamentary system and the central Government operates out of Rarotonga, its Capital. Some services on the outer islands are administered by an Outer Island Administration, which runs parallel with the elected Island Councils or ‘Konitara’.

Limited economic opportunities have restricted the achievement of equitable development in the outer islands. This challenge has been further compounded by the
inadequate coordination between the various administrative arms of government, effects of political influence, policy inconsistency, poor parliamentary oversight and other related factors.

Despite these challenges, the economy has grown at an average rate of 6 percent over the decade largely due to the rapid growth in the tourism industry coupled with the Economic Reform Programme (ERP) that introduced stringent fiscal and structural reform measures in 1996. It is generally recognised that for the economy to continue to grow, it must strengthen its private sector-led development with the Government providing a conducive macroeconomic environment, providing critical physical and social infrastructure, maintaining law and order and providing institutional and political stability.

The Government has also taken some positive steps to improve its management of the environment and has adopted a more focused approach to its social development goals consistent with its various international and regional commitments, including under the Millennium Declaration and various regional instruments endorsed by Forum Leaders. Moreover, the Government also recognizes that if the needs and the aspirations of the people are to be met, key stakeholders in the private sector and community need to be involved and that support from development partners and Council of Regional Organisations in the Pacific (CROP) agencies need to be, amongst other things, better targeted and more effectively coordinated. The Cook Islands Government recognizes that, with respect to the latter, the Pacific Plan for Strengthening Regional Cooperation and Integration provides a regional mode of goods and services delivery and increased potential for greater regional collaboration and cooperation, which would be harnessed to achieve its national priorities.

The Cook Islands Government has acknowledged the importance of incorporating in its national development efforts the key guiding principles articulated in its various international and regional commitments. The challenge remains as to how these can be achieved and appropriately reflected in its resource allocation and aid management strategies. Compounding such challenges is the number of agencies that have overlapping interests and responsibilities, with little coordination of effort amongst them and at times little, or in some cases no, sharing of information. This is particularly evident in cross cutting areas of natural resource and environment management.

The country also constrained by limited capacity, both at individual level as well as organizational /institutional level, to deal with the complex issues that require cross-sectoral and interdisciplinary approaches. Limited availability of quality information further compounds the difficulties faced in identifying appropriate responses needed to address its development goals.

Given the above, it is clear that opportunities exist to achieve national development priorities through more systematic national efforts complemented by harmonized and coordinated development partner and CROP support. The Cook Islands Government believes that this National Sustainable Development Plan (NSDP) for 2006-2010 provides the platform for doing so.
APPENDIX B – EXTRACT FROM DRAFT NATIONAL SUSTAINABLE DEVELOPMENT PLAN

OBJECTIVE

The primary objective of this NSDP is:

‘To build a sustainable future that meets our economic and social needs in partnership with government, the private sector and local, regional and international stakeholders, without compromising prudent economic management, environmental integrity, social stability and the needs of future generations’.

GUIDING PRINCIPLES

1. Sustainable Development Is A National Responsibility For All Cook Islanders
   - means that all people of the Cook Islands have a responsibility to ensure that the three pillars of sustainable development – economic growth, social cohesion and environmental protection – are given balanced treatment to guide the future development of the Cook Islands

2. Democratic Principles, Basic Human Rights, Respect for Cultural, Religious and Ethnic Diversity And The Rule Of Law
   - means that every Cook Islander has fundamental rights, which should be respected

3. Equitable Economic Development And Universal Access To Basic Health And Education And Environmental Sustainability Are Essential Prerequisites For Poverty Alleviation, Social Harmony And National Security
   - means that only when every Cook Islander has an equal opportunity to benefit from economic development and basic public services, and environment sustainability is assured, can we expect to live a peaceful existence free of hardship, conflict and instability

4. Special Needs of the Outer Islands and Disadvantaged Groups Are Recognised
   - means that special consideration is necessary to address the development needs of the outer islands and disadvantaged groups

5. National Development That Reflect Appropriate Regional And International Commitments
   - means that development should respond to the needs and aspirations of all people of the Cook Islands, while at the same time, be mindful of commitments that have been made by the Government at the regional and international levels
6. **Good Governance Promoted Through Participatory Decision-Making Process At All Levels Involving Key Stakeholders, Including Community, Non-Government Organizations, and Government Agencies**
   - means that decisions made, and actions taken, by all levels of Government and community are transparent and accountable

7. **Coordinated And Harmonized Access To, And Effective Use Of, National Resources And Development Partner Support From Bilateral, Multilateral Development Partners And Regional Organizations**
   - means that national resources and development assistance are efficiently and effectively used

8. **International And Regional Foreign Relationships And Partnerships Must Be Based On Mutual Respect In The Interest Of The Cook Islands**
   - means that relationships with other nations are based, first and foremost, on what’s in the best interest of the Cook Islands

These guiding principles, together with the 6 priority areas identified during the 2003 National Development Forum (NDF), post-NDF consultations, the Cook Islands Constitution and regional and international commitments, have led to the formulation of the following 9 **National Development Goals (NDPs)**. The NSDP identifies a set of strategies required to achieve each of the following goals, key outcome targets to measure progress within the period of the Plan, and the government agencies responsible for coordinating the activities required to achieve these targets.
APPENDIX C

EXTRACT FROM DRAFT NATIONAL SUSTAINABLE DEVELOPMENT PLAN - NATIONAL SUSTAINABLE DEVELOPMENT GOALS

GOAL: WELL MANAGED PRIVATE SECTOR LED ECONOMIC DEVELOPMENT
Macroeconomic Management and Private Sector Development

GOAL: WELL EDUCATED, HEALTHY AND PRODUCTIVE PEOPLE

GOAL: SUSTAINABLE USE AND MANAGEMENT OF OUR NATURAL RESOURCES AND ENVIRONMENT
Marine, Land, Agriculture, Environment, Waste and Water

GOAL: STRENGTHENED AND AFFORDABLE BASIC INFRASTRUCTURE, TRANSPORT AND UTILITIES TO SUPPORT NATIONAL DEVELOPMENT
Information, Communication and Technology, Energy, Road, Sea and Air Transport, Airports and Harbours

GOAL: A SOCIETY BUILT ON LAW AND ORDER AND GOOD GOVERNANCE AT ALL LEVELS OF GOVERNMENT, PRIVATE SECTOR AND LOCAL COMMUNITIES
Parliamentary and Whole of Government Governance, Outer Island Development, Public Finance Governance, Law and Order

GOAL: STRENGTHENED NATIONAL COORDINATION AND INFORMATION SYSTEM FOR DEVELOPMENT PLANNING, MONITORING AND EVALUATION
Information Systems and Statistics, Institutional Coordination

GOAL: A SOCIETY THAT TREASURES CULTURAL HERITAGE, VALUES AND IDENTITY WHILE RESPECTING CULTURAL DIVERSITY
History, Culture, Language, Heritage Sites, Traditional Knowledge and Practices

GOAL: AN EFFECTIVE FOREIGN AFFAIRS POLICY THAT MEETS THE NEEDS AND ASPIRATIONS OF THE COOK ISLANDS
International Relations, Aid Effectiveness, Council of Regional Organizations (CROP) Effectiveness

GOAL: A SAFE, SECURE AND RESILIENT COOK ISLANDS
All Hazard Risk Management, Immigration and Border Control, Transnational Security
Development on Tasmania’s Bruny Island: Changing the Character of the Island?

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This paper examines the challenges of sustainable development in a small island community. Bruny Island, off the south-east coast of Tasmania, was inhabited for thousands of years by Aborigines and has been of importance to European settlers since the early 1800s. Often described as a microcosm of Tasmania, Bruny Island is facing development and sustainability issues similar to its mainland. Approximately 600 people permanently live on the island but there is also a sizeable population of shack (holiday home) owners. A key issue, of relevance to many islanders, is how best to manage tourism and residential development without destroying the island’s unique character. This rural haven is being ‘discovered’ by new residents drawn from interstate and overseas to the island lifestyle. With its significant environmental values, Bruny Island is also attracting an increasing number of tourists, greeted by mixed reactions from residents. Increases in resident and visitor populations create challenges in terms of infrastructure, including ferry access, but there are also some positive outcomes. For example, many of the new residents have a strong conservation ethic, which has resulted in large areas of land being privately reserved.

Changes to the island’s economic structure and mode of governance have also shaped development. Traditional agriculture has declined and the tourism industry is increasingly important to the local economy. It has been more than a decade since the amalgamation of the municipal government, the Bruny Island Council, with a ‘mainland’ Tasmanian council and more recently a new planning scheme (a statutory document regulating or prohibiting use or development of land) has been introduced. Drawing on interviews with government officers, developers, tourism operators and islanders, this paper examines changes on Bruny Island, particularly those associated with tourism and residential development, and explores their consequences. Sustainability visions for Bruny Island, and the relevance of this study to other islands, will also be discussed.

The Tasmanian coastline and coastal areas and islands [are] pretty much about the last place[s] that can be hit in Australia for development and [they are] going to get hit (RD1).

The Kinmen Declaration from the previous International Small Islands Studies Association (ISISA) conference recommended ‘that where tourism is seen as a major opportunity for economic prosperity it requires careful planning, management and implementation in consultation with island people so that the natural and cultural environments are protected’ (ISISA, 2004). This paper will examine how an Australian island is positioned in regard to this recommendation.

Islands – special cases for sustainability?

It is difficult to generalise about islands, especially when comparing large and small islands, or oceanic small island states and offshore sub-national islands, but it can be argued that all islands are subject to the impact of a common range of constraints imposed because of their insularity (Royle, 2001). A range of features may classify islands as ‘vulnerable’, and hence may impede sustainability. Compared to continents, islands have a high ratio of coastline length to area, and coastal environments are particularly sensitive areas. Many islands have a higher proportion of endemic species than continental areas. Economically, islands can be disadvantaged due to the limited range of natural resources and isolation from markets.
Diseconomies of scale mean high per capita costs to provide basic infrastructure and services. Transportation difficulties can affect a range of economic and social issues, including tourism and access to health care (Baldacchino, 2004). Small populations potentially make islands more demographically volatile - for example, emigration of people seeking opportunities elsewhere, which can have flow-on effects. In the case of Bruny Island, on resident commented that socially there is a real problem in sustaining such a small population in today’s economy. There is a fair bit of poverty … That social-economic sustainability is very fraught (RR1). On small islands, everyone tends to know each other well and this may influence decision-making. It was difficult for a Council like Bruny to manage this island professionally and not to be parochial. There tended to be almost petty corruption on the scale of the Bruny Council because everybody knew everyone and decisions were often made on the basis of local interests or self-interest or the interests of the people that you knew rather than with a greater vision (RR6).

According to Deschenes and Chertow (2004), islands face more immediate sustainability challenges than continents and their small size and isolation forces these issues to the forefront of environmental management and planning. There is less room for error on small islands. Bruny is facing development pressures similar to her ‘mother’ island of Tasmania, however, as Royle (2001) maintains, the effects of insularity tend to be more pronounced the smaller the island is.

This research on Bruny Island forms part of my doctoral study, exploring tourism and environmental management on four Australian islands. This paper presents qualitative research drawn from interviews concerning the Bruny Island case study. The aim of this paper is to examine the effects of residential and tourism developments on the island and islanders, and to explore the role of governance and islander visioning in sustainable island management. Bruny Island was selected as a case study because it is a place with significant environmental values that is attractive to both residents and tourists. Through a process of criterion and snowball sampling, key stakeholders were interviewed, including islanders, tourism operators, developers, and state and local government officers involved in island management. I will draw on thematic analysis of these interview transcripts to reveal the key development-environment-social tensions facing Bruny Island. Note that quotes in italics, as above, are the words of interview participants, and their speaking position is identified (RR is Respondent Resident; RG Respondent Government; RT Respondent Tourism; and RD Respondent Developer).

The setting

Bruny Island is Tasmania’s fourth largest island (354 square kilometres) and is 40 kilometres south of the capital city, Hobart (see Figure 1). It is accessible from the mainland by a 20-minute vehicular ferry crossing. The Nuenonne band of Aborigines occupied the island on a permanent basis, numbering around 70 people. Lunawanna-alonnah (the indigenous name for the island) was the ancestral home of Truganini, the last known full-blooded Tasmanian Aborigine. Abel Tasman was the first European in the region in 1642, and following explorers Furneaux, Cook, and Bligh, French Admiral Bruni D’Entrecasteaux named the island. Whalers and sealers began operating in 1804 and from the 1830s the island was predominantly used for timber, orchards, fishing, and sheep and cattle grazing.
Today, the island has a relatively small residential population of just over 600 (Australian Bureau of Statistics, 2001). However, it draws a comparatively large number of tourists. Key attractions are its wilderness and wildlife and its laid-back atmosphere and lack of people (RT1). The South Bruny National Park was gazetted in 1997. It comprises 14 per cent of the island’s area, including rainforest, and is surrounded by spectacular coastal scenery. An eco-cruise business operates around this coast and attracts thousands of visitors annually to view bird and marine life. Wildlife viewing is also popular at ‘The Neck’ (the narrow isthmus joining the north and south of the island) where there is a fairy penguin colony. Tourism
Tasmania (2005) figures show that in the year ending 2004, 39,727 people visited Bruny Island (22 per cent international and the rest from interstate). The last intrastate survey in 1997 estimated 71,800 day visits by Tasmanians (Tourism Tasmania, 1998).

The following sections will examine major changes on the island, and environmental and social consequences of these changes. I will then explore the role of local governance and island visioning in future sustainability strategies.

From agriculture to tourism

Bruny is a fantastic island - not as fantastic as it was, so while you see it now and you think how great it was on the scale of what it was once, that’s the price of development and tourism adds to the price (RG3).

Reflecting similar challenges on many islands, Bruny has experienced a decline in traditional economic activities, particularly agriculture. [The island’s] economic base is very, very narrow and quite fragile so to get any income off the island is a challenge. Some people live on the island and work in Hobart every day, so it is another way of getting money into the local community (RG4); The guy next door makes more money out of accommodation cabins than he did out of cattle (RR1).

The tourism industry is increasingly important to the local economy. The economic effect of visitors to the island, including the activities of absentee landowners, Tasmanians and interstate and international visitors, is estimated at just under $12 million annually (Kingborough Council, 2006a). The tourism industry is significant for local employment. It is by far the biggest employer now. Probably over 100 jobs indirectly could be related to tourism ... 42 businesses reliant on tourism (RR1).

While worldwide growth in tourism over recent decades has boosted the profile of oceanic islands, offshore islands close to large domestic markets also attract significant visitor numbers, as they present a convenient destination for short breaks. Islands are generally mini-destinations in their own right … islands are fairly easy to brand because they are physically separate bits of land (RG4). However, lack of accommodation is a limiting factor for Bruny tourism. During 2004 only one-third of visitors (12,570 people) stayed overnight (Tourism Tasmania, 2005). Bruny’s close proximity to Hobart makes it a feasible day trip destination, and this has environmental and economic implications for the island. Most of the dollars are spent back in the city, in this case Hobart, where the people are actually staying. They take all the impacts during the day and do not get much of the benefit (RG4).

Social tensions have also arisen. For example, residents are affected by crowded ferries and increased traffic and tourism developments can be perceived as a threat to their lifestyle. We should be charging everybody to come … If you want the island to stay as it is, that is the elitist tool. Do you throw your hands up and hollow and let the whole show get trashed, which is being done? (RR2). One respondent recognises the importance of maintaining the island character, noting that a key issue is:

Sustainability in the context of the character of the place; the values that the residents place on living there; what is Bruny all about? Sustainability in terms of maintaining the character that obviously appeals to visitors ... lots of those ‘bloody visitors’ starting to detract from the aesthetics, the lifestyle that people have there. Does that suddenly mean that residents do not want to live there anymore? Do they start to
leave the island and does that suddenly change the character of a place - the friendly locals? … Sustainable growth that will not diminish the values of the island, managing volume in a way that is both safe and does not lose that character (RG1).

It is not only islanders who may resist further tourism development or mass tourism. Many Tasmanians regularly visit Bruny on camping or bushwalking trips and are attracted to the island’s natural values and the lack of other visitors and five-star resorts. Tourism on Bruny comes from people who do not want to see that new tourism come in with a lot of money and a lot of high-class resort type thing where people will have to pay a lot of money to have a holiday, so it is the sense of the beauty being exploited that people do not like (RR4).

Clearly tourism is a key management issue in this case study. Balancing tourism growth with maintaining the island’s natural and social values is appreciated by a tour operator, who notes that as the island is becoming a more iconic destination, the real challenge is how to balance the visitors to not spoil why the first ones came there in the first place and not to destroy what the residents and holiday people who come regularly, love about the island. The infrastructure that gets put in has to be compatible to that. I am for more infrastructure, accommodation, tourists and so on, but I am dead against massive development without looking at the overall picture (RT1). Kingborough Council appears to recognise the value of the island from a tourism perspective. It’s probably the biggest asset we have (RG5). Their visitor strategy focuses on ‘facilitating appropriate development consistent with the values of local communities’ (Kingborough Council, 2006a). The Council recently formed a committee to manage a joint tourism marketing plan for the area south of Hobart. However, Bruny Island representatives have not yet been appointed because of the difficulties in getting on and off the island for meetings.

Environmental consequences

*Kingborough is at a crucial stage in terms of management of its natural resources and trying to balance this with tourism development (RG2).*

Recent changes on Bruny Island have had both positive and negative environmental impacts. Ecotourism plays an important role on Bruny, and it may be claimed that this niche sector can promote conservation. *It is much easier to protect landscapes because that is what tourists come to see so you get tourist operators swinging behind it … additional money has been generated for National Parks … One of my worries is that there is no direct revenue-raising from visitors … no levy on vehicles, no environmental levy, which could be used to reinvest back in the island (RR1).* However, Krüger (2005) has found that the role of ecotourism in conservation is perceived to be less sustainable in island habitats, perhaps because of greater ecosystem fragility and hence lower carrying capacity. Exploring three scenarios for the relationship between tourism and conservation, Budowski (1976) recognised that it is usually one of coexistence moving towards conflict and that the aim should be a symbiotic relationship whereby both tourism and conservation derive benefits from the relationship. The best strategy for the environment and local residents may be no tourism development at all (Butler, 1998) even if it is supposedly sustainable. Butler (1997) suggests that the Orkney and Shetland islands offer good prospects for a successful relationship between tourism and the social, economic and natural environment, partly because their climatic characteristics, high cost of access and short season are unlikely to attract resort-type development. Similarly, Bruny’s temperate climate may be a blessing in disguise, as recognised by one
resident. I hope we don’t go the way that some other places have gone. The saving grace here is probably the climate (RR6); Difficult access is a decided advantage and if people keep saying they want easy access you destroy what you’re going there for … As soon as you put big ferries on, you’ve got every other bit of infrastructure and then you haven’t got an island anymore (RR2). If Bruny was connected to the mainland by a bridge, that would be the biggest nail in the coffin for Bruny Island’s environment … because it would open the doors to so many other vectors of destruction (RG2).

From discussions with respondents, it appears that residential and tourism impacts on the environment are minimal at this stage and tend to be localized, such as over-fishing and water pollution from domestic systems (and from forestry which is a divisive issue in the community). One participant suggests that questions of sustainability are more to do with social and economic on the downside; the plus side I think is environmental sustainability (RR1). Interestingly, the island’s changing residential composition is reflected in a shift in environmental attitudes. People who have recently acquired land or moved to Bruny Island have a strong interest in environmental values; this is a really positive outcome from the recent development. The locals are less concerned (RG2). Further, one respondent suggests that there are a lot of clashes culturally between them and a lot of the older more traditional land owners, they’re more of a shoot it and chop it type approach (RG5). While some land has been privately reserved in recent years, so much of the land is in private ownership … from a protective viewpoint it’s much better for us to have islands under reserve (RG3). If further development is inevitable, linking it with conservation outcomes would be a wise approach, as suggested by one government officer:

As pressure for coastal development is going to get greater and greater as the land becomes more valuable it would be good to see the Council insisting on innovative solutions … whereby any kind of further fragmentation is linked with greater security for some of the bush, so it’s not always going backwards. It may be two steps forward and one step back. Part of what is needed should be the local council or State or Commonwealth Governments looking to provide incentives to people to fund those innovative solutions that actually benefit the environment and try to get a win-win solution rather than just accepting that you can’t stand in the way of progress, and that these important areas have to be sacrificed and lost (RG6).

One respondent believes that environmental management is easier on islands that on mainlands: That is why islands in general are in better condition ecologically than larger areas (RR1), while another believes that islands should be managed differently, because of the added vulnerability … I’m not thinking of Tasmania as an island. I’m talking about smaller islands because more or less the whole island is impacted upon by the coast … [which] is very vulnerable … The pressures are so much higher per unit area (RR2).

**Tensions within the island - islanders and newcomers**

There is major conflict between the people who want change and the people who do not … residents basically want more control over what can come to the island (RR4).

On all islands, social tensions can be evident between residents, such as competition for space between those who involved in tourism and those who are not, and differing opinions about change. On Grand Manan Island, New Brunswick, for new permanent residents on the island,
‘known locally as people “from away”, there is a pervasive sense in all their relationships with locals that they are outsiders’ (Marshall, 2001, 166). However, there are also positive outcomes from growing island populations. Residents may desire a larger population to justify a separate governing body, improvements in health services, or the establishment or maintenance of an island school.

Bruny residents clearly value their island’s lifestyle benefits. *Bruny is the last vestige of privacy and solitude and a haven away from things* (RR3). Isolation was recognised by many respondents as both an attractive feature of islands, and a challenging element of island life. *There are people tucked away in them there hills ... If you are a reclusive type of person it is an ideal sort of environment but on the other hand if you are not it is a major challenge. You feel as though you have to go a city at least once a week to get your hit of whatever you need in the city - stimulation … it takes you a few days to kind of acclimatise to it … it is like a culture shock* (RR4). However the boundedness of islands may provide residents with a greater sense of identity and community than their mainland counterparts, particularly when faced with external threats to their way of life. *It is a tribal thing and everybody on Bruny more or less pulls together if they see something against them; then they all fight like cats when it is something internal* (RR2). One respondent explained social relations in the small community:

> We are vulnerable but people on an island tend to be more close-knit as well because we rely on the neighbours ... They are the only other people around ... you have to learn to get on with them on a certain level even though they may not be people that you necessarily socialise with or be friendly with if you were living somewhere else but there is a certain sort of respect that you have to develop...Everything is word of mouth around here ... The negative side of that is gossip which you probably can get anywhere but you are more aware of it on the island. People know more about you than you know about yourself half the time (RR4).

However, as this secluded rural island is being ‘discovered’ by mainland Australians and international buyers, it appears that the close-knit community is unravelling.

*In the ‘70s ... everyone knew everyone because there was only a population of 311 ... but about ten years ago the population started to increase quite dramatically ... In the last five years the trend has been for a more elite mainland (mainland meaning the eastern seaboard [of Australia] and America and other nations) coming here to buy land to either build on and live part-time or as an investment. Very rarely these people have anything to do with community activities ... there would be lots here I have never heard of and never see (RR3).*

Bruny is dotted with shacks and, increasingly, luxury weekenders, reflecting the popular trend for coastal housing in Australia. Residential subdivisions are fragmenting arable land and environmentally-significant landscapes, and leading to demand for improved infrastructure and services. Indeed, both tourism and residential development are straining the capacity of Bruny’s existing infrastructure and services. This has been recognised by the State Government, which recently initiated a Bruny Island transport review as a result of an ‘increase in demand for coastal properties, increased tourist numbers and continued economic activity’ (Tasmanian Government, 2005). Many new residents are attracted to Bruny’s isolation but then they want a hamburger joint or services and demand it from the council. *Tourists and new residents come from Sydney or elsewhere and expect services comparable*
to where they previously lived (RG2). Several interviewees expressed strong criticism of the ferry service, as there is only one vessel. There is no backup available so if something did happen to the ferry it would cause quite a drama on the island. There does not seem to be a very good risk management strategy (RG4).

The focus has shifted from the insular community to the wider world, and this is in large part due to improved access. Once the vehicular ferry came to the island (which was 1950) … it was not just your local community … it has gone from being quite an isolated place to being like a little suburb almost (RR4); There has been a changing tone with the newer residents … the open, carefree atmosphere of Bruny is being undermined by people fencing everything; locking gates; having alarm systems on; and they even fly in and fly out with aeroplanes. What is our island coming to? (RR3). With continued development and improved access, is it possible that Bruny will become an island suburb of Hobart? Bruny is rapidly going downhill because they are trying to get the access better and better … The absolute key to islands and island life is the access (RR2); The beauty of the island is that wild and romantic getaway feel but now you're looking at subdivisions the whole island romance is disappearing … The island is only going to get more popular. In fact it will be a well-known commuting area for people in Hobart now that the ferry is more reliable and faster so that access is easier … it’s really disappointing to have relinquished islands for that purpose (RG3). Rising land prices have allowed many farmers to sell their land, but have excluded lower income people from buying into the island which, in one respondent’s view, is extremely unfortunate because it means that our coastal locations and areas of high amenity will be occupied only by those with the resources (RR1). Indeed, there have been noticeable changes in community composition and various groups are identified as ‘alternates’, ‘rednecks’, ‘shackies’ and ‘seachangers’. Social tensions are evident between some of these groups and can be related back to changes in the island’s economic base. For example, some descendents of the early settlers, mainly associated with farming, are claimed to show extreme hostility to outsiders, quite palpable. If you go into the hotel where a lot of these people, particularly the men are, they gather their strength and support in one another in places like the pub. It is almost dangerous to go in there - just the vibes … they have very traditional attitudes. They feel under threat, and their lifestyle is under threat (RR1). One resident described tensions between different social groupings as:

… a series of eggshells and if you walk on them they might break and it is very, very easy to get offside with one group. There are extraordinary tensions between the groups and it is easy to make mistakes … if you cross boundaries and try to do what you might normally do in, say an urban situation, where these things are less obvious, then you do get hostility because places like this operate on rumour … Creating space is a social process … Spatial outcomes and things that happen on the ground … are often the result of rumour turning into fact in people’s minds and then battles being fought over it and the outcome reflecting those particular views and perceptions (RR1).

Tensions across islands - Bruny and its ‘mainland’

Have an island authority set up, rather than have us relying on the good wishes of a mainland council (RR7).
Baldacchino (2004, 80-81) notes that metropoles may try to prevent island devolution by ‘deliberately avoiding the creation of exclusively island-based administrative or political units, ensuring that geographic “island regions” are incorporated within larger sub-national units’. Bruny Island Council was amalgamated in 1993 with Kingborough Council, the adjacent ‘mainland’ Tasmanian local government body. Considering that Bruny has a distinct community, Haward and Zwart (2000) suggest that it could be viewed as an ‘unnatural’ amalgamation, formed only on the basis of administrative efficiency. Following amalgamation, the Bruny Island Community Association was established as a ‘watchdog service’, and is now affiliated with other island organisations. Many islanders are still displeased about their perceived loss of independence.

Ninety five per cent of the residents on the island were against the amalgamation … I am yet to be convinced that it was a wise move. We used to make our own decisions and that is pretty important to an independent islander (RR7); Kingborough’s land mass has doubled by taking us on but of course we have not got the votes; we have not got the residents … Urban area managers concentrate their funding on … infrastructure for high density population areas and all of these are just unnecessary on Bruny. We still pay the rates but we do not get a lot for it … we should have been amalgamated (which we said all along) with a rural council rather than an urban council … Kingston will be a city any minute and what are we going to do with a city mentality? (RR3).

In 2004 Kingborough Council introduced a new planning scheme (a statutory document regulating or prohibiting use or development of land) which replaced the Bruny Island Planning Scheme 1986. Large areas of the island are now zoned Environmental Management (identified as having specific environmental values worthy of conservation) but recreation and residential uses are still allowed in this zone. Changes to the planning scheme have concerned some residents, particularly in relation to subdivision of rural land. They have great tracts of land which they are reserving for forty-spotted pardalotes, swift parrots … The mostly arable farmland does not harbour these species so we are looking at land that is no good for agriculture being kept and agricultural land being subdivided … in the previous planning scheme they were not allowed to subdivide arable farmland … but now they are looking more after the forty-spotted pardalotes and the swift parrots rather than the farmers (RR7).

Some residents believe that the island has particular issues that need to be addressed separately from the rest of the municipality. The Bruny Planning Scheme was a good planning scheme … but it was very difficult for them to organise professional services such as building inspections and health services so those things have an economy of scale … It would be important to develop a particular planning strategy for the island as a separate thing from the rest of Kingborough … Some form of administering that from the island would be an ideal situation, in consultation with the services that are available from having a larger council office - that infrastructure which we can never achieve on Bruny (RR6).

However, one of the views from the ‘other side’ is that islanders should be treated the same as everyone else in the municipality:

They see themselves as special and different; not sure if we do … Their sensitivity is on the basis that they used to have their own council in 1992 and therefore they see themselves as being different, perpetuated particularly by the old-timers who used to be on the old Council.
They liked the old days because they could do what they wanted … I don’t know if they’re a terribly happy bunch in a lot of respects. There’s been a push for years for a separate committee to exist for Bruny Island matters, as part of the push for sort of semi-autonomy (RG5).

Whether or not it is merely a matter of appeasement, recent Council initiatives towards Bruny are promising. Late last year the Council established a Bruny Island Advisory Group (as a special committee under the Local Government Act 1993). There is a ray of hope because finally - since 1993 when we were amalgamated, we have been plugging for a special advisory group on Bruny Island. It was in the Bruny News today that they are calling for nominations … finally after over ten years of hoping to one day have a voice (RR3). However, the advisory body is not a Council Committee so its activities are reported to Council through the Community Development and Arts Committee. The purpose of the Advisory Group is to facilitate improved communications and consultation on matters relating to:

- the Planning Scheme and future amendments;
- Council services;
- strategies for agriculture, tourism/visitors and environmental management; and
- liaison with State Government on services (Kingborough Council, 2006b).

Island visions and sustainability strategies

Council has got to get this vision business for Bruny Island and get it incorporated in the Planning Scheme fast and that is the only thing that I can think of in the short term that might save something for Bruny … everybody has to have their say and the rich people, if they have the bigger say, we will go nowhere because they still want their big house on top of the sand dune looking at the sea (RR2).

What does the future hold for Bruny? How do managers and islanders make decisions about balancing the benefits of tourism development against risks to the natural environment? Planning approaches are often ad hoc, but it is important to look at developments across the island as a whole. Community consultation is difficult as there are often divergent perspectives regarding tourism, and it is necessary to resist the temptation to group ‘the islanders’ together as one voice in the consultation process. In analysing the integration of sustainability principles in the planning processes of local tourism destinations in Australia, Ruhanen (2004) questions the experience of local governments in tourism planning. She notes that as primary industries face decline and tourism rises in importance, local governments need to re-channel their planning and management skills.

An important consideration is whether tourism should be envisioned as a separate industry or as part of a wider island sustainability plan, linked to other economic sectors and to social and environmental factors. Ioannides and Holcomb (2003) emphasise the importance of adopting planning and policy frameworks that do not treat tourism in isolation. Strategic visioning in the tourism sector has been documented (for example see Grant, 2004, on integrated objectives for tourism development with regard to sustainability on the Isle of Wight). Kingborough Council has started looking at a process of branding the island, to decide what their competitive advantages really are, what their key values are, and how they can develop their tourism experience around those values, but we’d like to think that rather
than just do a tourism planning exercise, it is a brand for the whole island - the guys that are producing the food, the farmers and other industries (RG4).

In terms of being a tool for managing development, the local planning scheme is pivotal to sustainability strategies. *Statutory planning schemes on the whole tend to be fairly prescriptive and do not tend to be very good in terms of coping with the aspirations and values and incorporating that into future development* (RG4). The Kingborough Planning Scheme is currently under review, which presents a formal avenue for islanders to provide input. Following a petition to Council from ratepayers, the Bruny Island Advisory Group is currently facilitating a survey of residents and ratepayers to obtain views on a vision for the island, and is ‘keen to ensure that the special needs of Bruny Island are also incorporated in the current review of the Kingborough Planning Scheme 2000’ (Kingborough Council, 2006c). The petition stated:

while not being opposed to development in principle, request that all large scale housing development submissions for Bruny Island be deferred until a future vision plan for Bruny has been provided by Council in collaboration with residents. We are concerned that insufficient attention is being paid to the ability of the Island’s infrastructure to cope with increases in population. We would like to see a Future Vision Plan that provides a balance between the permanent population and the supporting infrastructure, while preserving the appealing uniqueness and non-suburb like character of Bruny Island (Kingborough Council, 2006c, 1).

One of the survey questions asks whether the island can ‘sustain an increased permanent or holiday resident population without compromising the Island’s important values’ (Kingborough Council, 2006c). Interestingly, it does not question whether the island can sustain an increase in tourist numbers, suggesting that islanders may be more concerned about growth in residents than in tourists. Perhaps this reflects the economic value of tourism to the island, or perhaps there are issues about sharing the island with permanent ‘others’, whereas tourists are only present short-term. *It is interesting - great differences over environmental issues and resource use, but generally the population of the island would be 90 or 95 per cent positive about tourists … Because it is such a small community everyone can see the benefits … jobs; having their eyes opened to different experiences; and they are proud of their island… people whom you may have thought were rednecks got involved in tourism … log truck drivers hate the tourists because it slows them and everyone else likes the tourists for that reason, because it slows the log trucks (RR1).*

Insularity can offer significant opportunities for sustainability. Baldacchino (2000, 68) challenges the notion of small island vulnerability and identifies their comparative advantages - for example, limited exploitable resources can lead to small island resourcefulness ‘which confirms that necessity is the mother of invention’. Islands can lead the way in adoption of more environmentally-friendly technologies. Well-defined boundaries allow easier monitoring of tourist arrivals and provide research opportunities across a range of subjects. Islands may have also advantages over mainlands in their ability to limit tourist numbers through access and infrastructure (such as ferry capacity, frequency and cost). However to take advantage of such opportunities, effective planning and management is vital. *It is so under-developed and it’s going to receive that pressure … if Council sets the right direction and locals set the right direction, they can get a good sustainable outcome (RD1).*
Conclusion

[Property magazines have] targeted Bruny Island as the next big place for private investment and development. Federal and State Tourism as well, in their tourism development for Tasmania, have identified the really untapped resource that needs to be marketed. It is going to come under increasing pressure for development, serious pressure. I’d suggest there’s a lot of … offshore owners there now, just waiting to do something (RD1).

If policy-makers and planners view offshore islands as untapped tourism destinations, development pressure will diminish their environmental and social values. Although the difference between sustainability and unsustainability can be very small in island ecosystems, local community involvement is an important predictor of sustainability (Krüger, 2005). Through the vision survey, the Bruny Island Advisory Group, and the review of the Planning Scheme, islanders have the opportunity to have their say in the future of their island, before developers pounce and the unique island character changes. The biggest challenge for the island is actually deciding what it wants to be in the future and the people together deciding what sort of place they want Bruny Island to be and then getting involved actively in the management of the island to ensure that it heads in the direction they want it to go (RG4).

This paper has highlighted several social and environmental values on Bruny Island that are vulnerable to tourism and residential development impacts. In relation to the Kinmen Declaration noted at the beginning of this paper, such development urgently requires careful planning, management and implementation in consultation with islanders to ensure that these values are protected. No doubt other islands around the world are facing similar threats and some of the island voices in this paper may sound familiar. Are certain developments really necessary on islands or can they be sited on the mainland? Through their size limitations, island can open up the possibility to seemingly understand an entire place - for tourists to explore the centre and periphery; for islanders to be familiar with most residents and locations; and for researchers to try to comprehend a contained (yet complex) case study. Perhaps people wish to know islands not for the reason of ‘conquering’ them, but to simply connect to a unique place, before development renders it no different from elsewhere.

It is managing okay but it is on the edge - Bruny could take off tomorrow and who knows what would happen then (RG1).
References


Sustainable Island Tourism: The Case of Okinawa
Hiroshi Kakazu, University of the Ryukyus

For small island economies such as Okinawa, Hawaii, Guam and Saipan, tourism has been the fastest growing and most important industry accounting for 20-70% of their external receipts. These island economies have comparative advantages in tourism because of their small market sizes, rich marine resources, tropical or sub-tropical climate, rich and unique cultural heritages, hospitality-oriented peoples, service-intensive nature of tourism, etc. Tourism is a “service” as well as an “export” industry which will substitute for manufacturing industry where small island economies do not have comparative advantage.

Island tourism, however, heavily depends on islands’ fragile and extremely limited natural as well as cultural resources. Islands’ over-expanded tourism industry has created various socio-economic-ecological issues such as cultural friction, water shortage, environmental degradation, food insecurity, imported inflation and family problem on the life of islanders.

The major objective of this paper is to identify and quantify “carrying capacity” of tourism dependent island economies focusing on Okinawa where tourism expanded about tenfold in the past three decades. Okinawa’s tourism industry is now facing a serious turning point because the total tourists’ expenditures have been declining in recent years in the midst of increasing trend of tourists who consume the huge amounts of islands’ fragile, nonrenewable resources. This paper particularly demonstrates that the supply of water is the single most important limiting factor for sustainable tourism development for any small islands.

Keywords: Island tourism, comparative advantage, carrying capacity, Okinawa water shortage, sustainable tourism, cultural friction, nonrenewable resources, food insecurity

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1. The Roles of Tourism for Small Island Economies

(1) Tourism as an engine of growth

According to the World Tourism Organization (WTO), about 700 million people traveled abroad in 2000, generating an estimated tourists' expenditure of $400 billion in 2002. WTO's "Tourism 2020 Vision" forecasts that globally the number of tourists will rise to more than 1.56 billion by 2020. While Europe currently accounts for about 60% of all tourists, the East Asian region is expected to witness the most dynamic growth in the coming years (see Fig. 1)

Fig.1:

<table>
<thead>
<tr>
<th>Region</th>
<th>2002</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>EU</td>
<td>527</td>
<td>1006</td>
</tr>
<tr>
<td>Africa</td>
<td>47</td>
<td>703</td>
</tr>
<tr>
<td>Middle East</td>
<td>29</td>
<td>115</td>
</tr>
<tr>
<td>South Asia</td>
<td>28</td>
<td>190</td>
</tr>
<tr>
<td>East Asia</td>
<td>6</td>
<td>180</td>
</tr>
<tr>
<td>Pacific</td>
<td>11</td>
<td>126</td>
</tr>
<tr>
<td>U.S.</td>
<td>7</td>
<td>195</td>
</tr>
<tr>
<td>World Total</td>
<td>900</td>
<td>1,006</td>
</tr>
</tbody>
</table>

For small island economies, the tourism or visitors' industry has been the fastest growing and most important industry accounting for 20-70% of their current external receipts (see Appendix A). Small islands, in particular, transformed rapidly into tourism dependent economies because (1) they lack natural resources to exploit for export earnings; (2) their market sizes are too small to develop a viable manufacturing industry; (3) tourism related industries are usually small-scale and labor-intensive; (4) they are endowed with marine resources, particularly beautiful beaches; (5) these islands are part of or surrounded by richer countries such as the United States and
Japan with well-organized transportation networks; (6) their tropical or semi-tropical climatic and cultural conditions are complementary with those rich countries; and finally these island communities have maintained internal political stability and offer warm hospitality to visitors.

(2) Tourism as an industry

Tourism is usually classified as a "service" industry. As such tourists' expenditures are recorded as "service receipts" in the balance of payments statistics. Tourists' expenditures, however, are quite different from other external "service receipts" such as sales of transportation, insurance, intellectual property rights and labor. Apart from lodging, a large portion of tourists' expenditures are in the form of local consumption and purchases of local or imported products as souvenirs. Therefore, "sales to tourists" are directly reflected in local production or imports of goods including agriculture and manufacturing.

For small island economies in particular, tourism needs to be conceptualized as a composite industry, not merely a service industry. Such a re-conceptualization of the tourism industry in small island economies will provide a development framework to diversify and revitalize diminishing local agriculture and manufacturing as well as conserving tourism resources including marine and historical and cultural assets (see Fig.2).
(3) Tourism as an export industry

As previously mentioned, tourists' expenditures are recorded as "service receipts" in the balance of payments statistics. These expenditures accounted for about 20% of Okinawa’s total external receipts surpassing that of U.S. military expenditures for many years. Tourists’ receipts imply precisely the same effect as exports of goods and services. The only difference between them being where the goods and services are traded and consumed.

(4) Tourism as “cultural catalyst” and friction

An important difference between commodity exports and service exports through tourism activities is that the former are consumed or stocked in the imported region, while the latter are inseparable from the exporting region where the services are rendered. In this sense, tourism is considered to be a package of economic as well as non-economic factors. In any country, tourists are mostly welcomed not only because of income and employment they generate, but also because they are regarded as “cultural catalysts.”

Despite a welcome attitude toward tourists, however, there are always deep-rooted fears among the island people that their fragile environments and rich culture might be eroded or degraded by a massive and continuous intrusion of outsiders. There are also constant complaints on the part of island economies that major tourism businesses, including hotel facilities and airline transportation, are dominated by mainlanders and that the majority of tourism-generated revenue is boomeranged back to the mainland. Similarly, many small islands’ tourism industry over-expanded through imported foreign labor has been creating various socio-economic problems and uncertainty for the life of islanders including water shortages, food insecurity, imported inflation and family problems. Therefore, it is an urgent task for tourism dependent island economies to determine the “carrying capacity” of tourists’ absorption for sustainable development.

(5) Tourism as a Peace Industry

Tourism is well-recognized as a peace industry. No country or region has ever adopted a policy to reject genuine tourists. As we have witnessed in recent years through incidents as the terrorists’ attacks on NYC and Bali, tourists are most sensitive to their own security. Therefore the bottom line for sustainable tourism is to secure “peace and stability” in tourist destinations. In this context, DTS students are requested to learn “risk management,” namely how to assess political as well as unexpected risks arising from travel. Of course, insurance is one of means to reduce such risks.
(6) Sustainable Tourism

The concept of "sustainable development" was first used by the Brundtland Report in *Our Common Future* (1987) as follows:

“.....a process of change in which the exploitation of resources, the direction of investment, the orientation of technological development, and institutional change are all in harmony and enhance both current and future potential to meet human needs and aspiration.” (WCED, p.5)

The concept is illustrated by the following figure.

![Fig. 3: A Concept of Sustainable Tourism](image)

Assume \( t \) is the passage of time and \( \Delta x \) is the rate of tourism resource use. As such, then “**sustainable tourism development (STD)**” can be defined as \( \sum t \Delta x \ t = 0 \), while unsustainable resource use (depletion) and over-conservation can be defined as \( \sum t \Delta x \ t < 0 \) and \( \sum t \Delta x \ t > 0 \), respectively.

According to the World Tourism Organization (WTO), STD meets the needs of present tourists and host regions while protecting and enhancing opportunity for the future. It is envisaged as leading to management of all resources in such a way that economic, social, and aesthetic needs can be fulfilled while maintaining cultural integrity, essential ecological processes, biological diversity, and life support systems. We must also add that STD should meet the needs and wants of the local host community in terms of improved living standards and **quality of life (QOL)**. The concept should also satisfy the demands of tourists and the tourism industry, and continue to attract them in order to meet the first aim; and, safeguard the environmental resource base for tourism. Therefore, “sustainable tourism in its purest sense, is an industry
which attempts to make a low impact on the environment and local culture, while helping to generate income, employment, and the conservation of local ecosystems. It is responsible tourism which is both ecologically and culturally sensitive.” (Homepage of the Association for Tourism and Leisure Education)

Okinawa’s tourism has expanded about tenfold since her reversion to mainland Japan mainly as a result of private sector initiatives (Fig.4). The industry generated an income of almost 400 billion yen or 11% of Okinawa’s GDP, and 38,000 regular jobs for a wide range of industries in 2004. The economy, however, could capture only 40% of total tourist spending through the sale of domestic services and goods. The rest leaked out on imports. Okinawa’s per capita tourist’s spending is only 41% of that of Hawaii’s. Okinawa’s tourism industry definitely needs to upgrade its quality. A $100 increase in its per capita tourist consumption is equivalent to an increase of 700,000 visitors in terms of tourists’ expenditures.
(Diversification of Tourism Industry)

There is no doubt that tourism is Okinawa's most competitive industry on both
domestic and international scales. As presented in the diversified development model,
Okinawa's tourism industry needs to diversify vertically through strengthening
intra-industry linkages, and horizontally through geographical linkages including
Okinawa's rural areas and cross-border areas such as the Ryukyu archipelagos, Taiwan,
Hong Kong, Shanghai and South Korea. Deepening the structure of tourism is the most
effective measure that can be taken to address the recent declining trend per capita
tourism consumption.

(Development Constraints)

There are also possible supply constraints with public utilities such as water and
electricity which have increased by more than Okinawa's economic growth rate since
reversion. Although a severe water shortage has not occurred in recent years, the water
supply is precariously dependent on rainwater (Fig.5 and see more details in Chapter 5
of Kakazu, 1994).

Fig. 5: Okinawa's Average Yearly Rainfall and the Number of Water-rationing Days

<table>
<thead>
<tr>
<th>Rainfall (millimeters)</th>
<th>Water-rationing days</th>
</tr>
</thead>
<tbody>
<tr>
<td>1972-75</td>
<td>2,356</td>
</tr>
<tr>
<td>1976-80</td>
<td>2,565</td>
</tr>
<tr>
<td>1981-85</td>
<td>1,878</td>
</tr>
<tr>
<td>86-90</td>
<td>1,927</td>
</tr>
<tr>
<td>1991-95</td>
<td>1,749</td>
</tr>
<tr>
<td>1996-2000</td>
<td>2,385</td>
</tr>
<tr>
<td>2001-2004</td>
<td>2,065</td>
</tr>
</tbody>
</table>

In addition to the increasing demand for water and energy resources as population
and tourists increase, the economy's carrying capacity and environmental disruptions
will become serious impediments to future development. It is particularly serious for
Okinawa where tourism, which depends on clean, sunny beaches, is the most important
engine of the economy. Fig.6 shows the trends of Okinawa's water and electricity
consumption as the de facto population (including the number of tourists and U.S.
military personal) rises in the future.
Fig.6: Okinawa’s Main Sustainable Indicators, 1972–2020

(A) De Facto Population

(B) Utility Consumption

(C) Per Capita Utility Consumption

Notes: De Facto Population = Resident Population + Non-resident Population. Figures for 2020 were estimated by this author. Water and electricity consumptions include all Okinawa islands. Sources: Compiled from the Okinawa Statistical Yearbook, various issues.

There is already sufficient evidence to suggest that Okinawa’s world-renowned coral reefs are on the verge of extinction due largely to global warming, overfishing and various construction activities. It is particularly important to assess whether or not Okinawa’s small, environmentally fragile islands can sustain their ever-increasing de facto population with their extremely limited capacity of renewable as well as non-renewable resources. Therefore, capacity as well as capability building towards
sustainable island development is a crucial issue.

I would like to suggest two popular methods to evaluate carrying capacity and environmental disruptions to Okinawa’s infrastructure such as transportation, water and environmental resources and amenities which support sustainable tourism. One is the method of the “Net Present Value (NPV)” approach. Here I present just a skeleton of the method as follows:

\[ R = \text{Present Value of Tourism Resources (i.e. water, electricity, amenities, beaches, etc.)} \]
\[ \text{DPV} = \text{Discounted Present Value of future tourism resources} \]
\[ i = \text{discount rate} \]
\[ n = \text{number of years a particular renewable and non-renewable resource can be used} \]

then, DPV can be formulated as

\[ \text{DPV} = \frac{R}{(1-i)^n}, \text{ or } (1-i)^n = \frac{R}{\text{DPV}}. \]

If the present economic “use value” of a particular tourism resource, i.e., water or coral reefs is $100 million, how should this resource be valued by the present generation if we have kept the same amount of resource without using it up to now? The valuation depends on two variables: the length of time (n = year) and discount rate (i). As is shown in Figure 7, the longer the time horizon and higher the discount rate, the lower will be the present value of the resource.

The present value of a future (n=5-year) $100 million will be worth $90 if we discount the amount by 2% per annum. The present value will become only $37 for 50 years
(n=50). If we discount the amount with 10% for 50 years, the present value will be almost zero. This will clearly suggest that the value of an environmental resource such as pristine, unspoiled coral reef will be worthless for poor fishermen presently if their living standards are not improved without utilizing it. The discount rate of a particular economic resource will be higher the lower the living standards.

(Contingent Valuation Method (CVM))

The other popular method is the contingent valuation method (CVM) which has been used widely in recent years to evaluate the economic value of tourism resources such as landscapes, coral reefs, flora and fauna, amenities, etc which are not easily valued through market transactions. The CVM method involves asking people directly about “how much they would be willing to pay (WTP) for specific value of environmental services”, or “how much they would be willing to accept (WTA) in compensation for giving up specific environmental services”. Therefore the method is contingent on a specific hypothetical scenario and questions asked (see more detail on the website of www.ecosystemvaluation.org/contingent_valuation). Table 1 shows an interesting result of the CVM application on Okinawa’s coral reefs. Tourists in Onna village are willing to pay 12,209 yen to conserve its coral reef, while visitors to Kerama islands and Naha citizens will pay 10,762 and 6,982 respectively. The study demonstrates that the value of environments will differ greatly by place, incomes, interviewees, age, sex and probably the way a survey is conducted. The CVM method needs a lot of refinements and improvements to be usefully applied to a particular project and situation.

<table>
<thead>
<tr>
<th>Kerama Island (visitors)</th>
<th>Onna Village (visitors)</th>
<th>Naha (citizens)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample persons</td>
<td>142</td>
<td>639</td>
</tr>
<tr>
<td>Average amounts</td>
<td>10,762</td>
<td>12,209</td>
</tr>
<tr>
<td>Standard deviations</td>
<td>2,147</td>
<td>1,091</td>
</tr>
</tbody>
</table>


The United Nations Environmental Programme (UNEP) released an interesting report in January 2006 on the value of coral reefs. According to the report, the total economic value of coral reefs is estimated at between $100,000 and $900,000 per square kilometer per year. The value of coral reefs critically depends on the incomes generated through utilizing coastal zones. Since the tourism industry in most small island economies
including Okinawa almost entirely depend on coastal resources, we need to assess the costs and benefits of preserving the coral reefs. The report says “close to a third of corals have gone, with 60% expected to be lost by 2030.”

(Water Balance)

Table 2 shows water balances (supply minus demand) which clearly indicate various sources of drinking water and its use for Okinawa Prefecture and Miyako Island. For Okinawa, water resources have rapidly shifted from river water (from 55% to 21%) and underground water (from 31% to 8%) to dams (15% to 68%) in the past 30 years to meet the increasing demand for water consumption. The site to construct a future dam, however, is extremely limited on the mainland of Okinawa.

Miyako Island has been a showcase for occasional water shortage and droughts because of its flat topographical conditions. The island has no river. Thus, the groundwater has been a lifeline for nearly 50,000 islanders. The islanders, however, discovered that they could store rainfall water in underground by constructing subsurface or underground dams. The first underground dam was completed in 1979 with 0.7 million m$^3$ storage capacity for irrigation (mainly sugarcane fields). The second and third dams were completed in the 1990s to the total storage capacity of 20 million m$^3$ which are enough to irrigate entire sugarcane fields. The structure of the underground dam is shown in Appendix B. An underground dam is defined as “an artificial structure constructed in geologic strata containing groundwater flow that is blocked and stored for use.” (Miwa, 1988, p.124). Miyako Island is formed by the porous Ryukyu limestone which has high permeability rates. Rainfall percolates rapidly into the ground and is stored as groundwater in between limestone strata and siltstone strata (bed rock).

Table 2: Water Balances of Okinawa and Miyako Islands, 2004

<table>
<thead>
<tr>
<th></th>
<th>Okinawa Island</th>
<th>Miyako Island</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total rainfall</td>
<td>2,065</td>
<td>38.4</td>
</tr>
<tr>
<td>Evaporation</td>
<td>516</td>
<td>9.1</td>
</tr>
<tr>
<td>Surface water</td>
<td>1,446</td>
<td>15.3</td>
</tr>
<tr>
<td>Surface runoff</td>
<td>332</td>
<td>15.3</td>
</tr>
<tr>
<td>River water</td>
<td>1,113</td>
<td>0</td>
</tr>
<tr>
<td>Used water</td>
<td>33</td>
<td>0</td>
</tr>
<tr>
<td>Unused water</td>
<td>1,080</td>
<td>0</td>
</tr>
<tr>
<td>Groundwater</td>
<td>103</td>
<td>12.0</td>
</tr>
<tr>
<td>Used water</td>
<td>12</td>
<td>7.8</td>
</tr>
<tr>
<td>Unused water</td>
<td>91</td>
<td>4.2</td>
</tr>
<tr>
<td>Total withdrawal</td>
<td>158</td>
<td>7.8</td>
</tr>
<tr>
<td>Used river water</td>
<td>33</td>
<td>0</td>
</tr>
<tr>
<td>Used groundwater</td>
<td>12</td>
<td>7.8</td>
</tr>
<tr>
<td>Dams</td>
<td>113</td>
<td>0</td>
</tr>
<tr>
<td>Desalinization</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Actual supply of water</td>
<td>142</td>
<td>7.0</td>
</tr>
</tbody>
</table>

Unit: $10^6$ $\text{m}^3/\text{yr}$
Notes: Total rainfall = Yearly rainfall ($\text{mm}/\text{yr}$) x total area ($\text{km}^2$).
Leakage rate = 10%
Sources: See Fig.5.
8. Concluding Remarks: Okinawa’s Tourism and Sustainable Development

(Issues for Okinawa’s Tourism Industry)

Okinawa’s tourism industry faces challenging problems to be resolved. First, despite the rapid growth of tourists in the past decade, tourism expenditures have not grown commensurate with the number of visitors. As a matter of fact, tourism incomes declined during 2000-2004 despite the number of visitors increased by 630,000 persons. The decline is also reflected in a sizable decrease in per capita tourism spending from ¥84,000 to ¥70,000.

Second, tourism is becoming more important in smaller islands where comparative advantage lies in the location of specific indigenous endowments including marine resources, local culture and hospitality. As we have seen, Ishigaki and Miyako islands are becoming Japan’s prime resort islands. We should note, however, that economic benefits such as incomes and employment arising from tourism differ greatly from island to island.

Third, Okinawa’s tourism heavily depends on mainland tourists. More than 95% of tourists are mainlanders. The Tokyo, Kansai and Fukuoka areas accounts for nearly 80% of the total tourists. Okinawa should learn a lesson from the bitter experience of Miyazaki where tourism boomed once and burst soon after. As we have noted already, although Okinawa may continue as one of the favorite resorts in Japan for the foreseeable future, this assessment depends largely on Okinawa’s future comparative advantages in environmental quality, rich cultural heritage and hospitality which supports the tourism industry. For Okinawa, this is a good time to realize and take actions to diversify its customers.

Fourth, as we have already discussed, the future growth of Okinawa’s tourism industry will be constrained by its limited carrying capacity. In particular, the limited supply of quality water and environmental degradation are the most important constraints. Although the OPG has planned to achieve 6.5 million tourists by 2011, there is no convincing data to support at all whether this target is consistent with Okinawa’s carrying capacity or not.

Finally, what is crucial in enhancing tourism activities is the availability of a highly flexible, skilled labor force. As we have noted, Okinawa has been experiencing a growing mismatch in the labor market arising from a rapid transformation in economic structure and lagging human resource development. Despite the rising unemployment rate, which is not only an indicator of an unutilized labor force, but also an indicator of multiple deprivations such as social exclusion, loss of self-reliance, self-confidence and psychological and physical health, many resort hotels are having a difficult time finding
qualified managers. This widening mismatch can be addressed by improved human resource development in targeted economic activities, namely tourism-centered and information-based activities.

<Selected Reading Materials>


### Appendix A: Tourism in Selected Island Countries.

<table>
<thead>
<tr>
<th>The South Pacific Islands</th>
<th>GDP ($million)</th>
<th>Trade balance ($million)</th>
<th>Tourism income ($million)</th>
<th>Exports / GDP</th>
<th>Tourism income / GDP</th>
<th>Tourism income / Exports</th>
</tr>
</thead>
<tbody>
<tr>
<td>Papua New Guinea</td>
<td>3,182</td>
<td>877</td>
<td>60</td>
<td>59.4%</td>
<td>1.9%</td>
<td></td>
</tr>
<tr>
<td>Fiji</td>
<td>2,036</td>
<td>464</td>
<td>431</td>
<td>31.5%</td>
<td>20.3%</td>
<td></td>
</tr>
<tr>
<td>Vanuatu</td>
<td>283</td>
<td>78</td>
<td>71</td>
<td>10.3%</td>
<td>26.8%</td>
<td></td>
</tr>
<tr>
<td>Samoa</td>
<td>268</td>
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### Appendix B: Structure of the Subsurface Dam of Miyako Island

- Sugarcane
- Ryukyu Limestone
- Ocean
- Siltstone Strata
- Rainfall
- DAM
Ahupua`a in the 21st Century and its Application to Archipelagic Fishery Ecosystem Planning

(Social Equity and Heritage)

Charles M. Ka`ai`ai, Kitty Simonds, and Paul Dalzell

Abstract

Pacific Islander knowledge about their resources has evolved over several millenia. Sustainable management practices ensured population survival, while management practices that failed resulted in their demise. Contemporary dependence by Pacific Islanders on imported foods, goods and services may strengthen the island economy but it ties the island to the global economy and makes island society and culture vulnerable to natural and man made disasters. Island communities can protect themselves against natural and anthropogenic disaster by empowering local communities to discuss and define their dependence on their environment and fully participate in the management and conservation of their natural resources. The Western Pacific Regional Fishery Management Council is in the process of transforming its fishery management plans (FMPs), which are currently focused on single species or species assemblages to archipelagic Fishery Ecosystem Plans (FEPs). Under the FEP, current Federal regulations will apply to each archipelagic ecosystem only as appropriate. New regulations will be developed to address problems particular to each archipelago and involve the participation of the island communities. This calls for a new Federal thinking, process and administration. This contribution discusses some of the challenges and possible solutions to this move from a centralized, Federal, continental, top-down approach to a decentralized, de-federalized, islander, bottom up approach to resource management.

Introduction

For many centuries, the Native Hawaiians practiced traditional cultural methods to protect Hawaii’s ecosystem and environment. What was the reason for protection of the ecosystem and environment? It was to ensure survival. Food and cultural materials were conserved and harvested at sustainable rates to ensure the growth and survival of the people and culture. These are high purposes: food and culture.

In native island cultures, man and nature are spiritually bound. “He Hawai`i au” is often translated to mean “I am Hawaiian,” it literally means “Hawai`i = I.” Man and the environment are inseparable. The health of the ecosystem bears directly on the health of man and the culture.

Current government policies and laws have a different base and focus; Hawaiian traditional and cultural practices have been overshadowed and displaced by customs brought by immigrants, western practices and a lack of specific environmental knowledge. Hawaiian traditional practices perfected ways to protect the natural
resources by protecting the ecosystem. These practices do more than just protect – they enable the ecosystem to be self-sustaining, thereby benefiting the culture and the communities dependent on the ecosystem for survival. Hawaiians knew that a self-sustaining ecosystem reflects a self-sustaining culture.

**Globalization and Exploitation**

The effort to implement traditional communities and values in natural resource management will be difficult. On a local level, traditional natural resource management may be implemented in local and regional management plans. For it to be truly effective for natural resource management it will take international, national and regional cooperation.

Today, governments, companies and individuals often proceed by the exploitation of land, cultural practices, religious customs, traditional knowledge, or biological assets of traditional societies. This is called globalization. While globalization has been effective in lifting millions out of poverty, millions more still remain in poverty. For the poorest of the poor direct access to nature and natural resources is their lifeline. Another effect of the globalization is increasing centralization of wealth away from the poor reducing their access to economic opportunity. The need for the United Nations, Food and Agriculture Organization, United Nations Economic Development Program, and other international aid and aid organizations is acute. Much of the ‘environmental wealth’ of world exists in third world countries. In extracting that wealth, economic benefit and opportunity has been slow in returning to benefit the communities who are the actual owners and stewards of that natural resource wealth.

First world bio-prospectors appropriate plants, recipes, and other products from third-world communities. Modern artists appropriate cultural symbols and the techniques of folk artists, often using them in ways that violate traditional laws and practices or kapu. Tourists trample across sacred lands, sacred sites and ecologically sensitive areas. Manufacturers reproduce holy images and artifacts for sale in the global market. These actions undermine the traditional values of a community and tear at the fabric of social cohesion built over generations.

The United States, through various Congressional actions, have sought to protect cultural values of their native people while at the same time disinheriting their native people of their natural resources by allowing the privatization of some natural resources and exercising eminent domain\(^1\) to provide benefits to its citizens by creating public trusts and public domains out of native resources. The United States is not alone in its inability to protect traditional, native people and communities. “Nations” in general have been poor custodians of native and traditional natural resource assets. Democracies have been successful in protecting individual rights but have been unsuccessful in protecting communal and traditional rights particularly when they involve their own native people. These rights need to be protected to ensure survival of the native, traditional cultures and people.

\(^1\) The lawful power of the state to expropriate private property without the owner's consent
Resolving the Conflict

How do we resolve what is clearly a cultural and philosophical clash? On the one hand there is the first world belief in individualism and materialism, on the other hand is the traditional belief in communalism and the non-commercial use of resources and knowledge. Present day intellectual property laws are established to allow owners of intellectual property to benefit through commercialization of their property. Traditional communities often seek to prohibit the commercialization of their knowledge. Traditional values and knowledge are under constant assault. Judicial interpretation and test for the recognition of traditional and cultural practice is the uninterrupted continuity of that practice, even in the face of open, hostile occupation and possession of the means to practice native culture and traditions.

First, the 1493 Papal Bull *Inter Caetera* should be rescinded by the Vatican. *Inter Caetera*, issued by Pope Alexander VI, became a major document in the development of subsequent legal doctrines regarding claims of empire in the "new world." The bull assigned to Castile the exclusive right to acquire territory, to trade in, or even to approach the lands lying west of the meridian situated one hundred leagues west of the Azores and Cape Verde Islands. An exception was made for any lands actually possessed by any other Christian prince beyond this meridian prior to Christmas, 1492. Strange as it may seem, legal decisions are still being made based on this doctrine that continues to damage native American claims to self-determination. Supreme Court Justice Ruth Bader Ginsburg cited the doctrine of discovery in the first footnote of 2005's infamous City of Sherrill v. Oneida Indian Nation of New York decision, denying the right of the Oneida Indian Nation unilaterally to re-establish sovereignty on its own reacquired aboriginal territory. The legal arguments for European dispossession of Native America trace back to the doctrine of discovery, ambivalently endorsed by Chief Justice John Marshall in the 1823 foundation case *Johnson v. M'Intosh*. The Doctrine of Christian Discovery, recognizing the superior right of the Catholic monarchs of Europe to enlighten the pagan Natives of the New World to Christianity and, incidentally, take over their land. This right derives from a series of papal declarations starting in 1454. The Vatican merely has to declare that the doctrine of Christian Discovery is no longer relevant in the current world context.

Second, there should be an international convention on the protection of traditional and community resources, a framework for vesting authority and responsibility for management and regulation of ownership of traditional resources under traditional community structure according to traditional law. Traditional communities should be given the opportunity manage and regulate their resources based upon traditional cultural practices and laws. This would include intellectual property. This convention would give Nations a framework for the recognition of the authority of traditional communities over their resources and intellectual property.

Third, traditional communities need to assert their right to manage and regulate their communities’ natural resources, to put into place regulations to conserve their resources to ensure the continued survival of their cultures. Unlike the Western concept that man is
separate from the environment, traditional cultures see man as part of and inseparable from the environment. To do this, traditional communities need to participate in the management and conservation of their natural resources. Communities must claim their right to cultural, traditional practice based on their history, ancestral and cultural cohesion and tradition. Their claims may include communal, holistic and shared cultural development, ancestral ties, kinship, religion, and belief systems. The community then asserts that it has certain resources integral to its identity, freedom of expression, coherence, and dignity.

Fourth, the community may be challenged in their assertions of their right to manage and regulate their resources. The challenge should be judged by international mediation based upon an international convention on the protection of traditional and community resources. If the challenge is successful, competing interests would be resolved according to equitable principles of international law. Communities may then regulate or protect their resources, may commercialize them, may allow others access on the principle of free and prior informed consent.

The greatest challenge to an international convention is whether the United States will adopt or accept an international convention. The United States remains isolationist in their treatment of their native people, preferring to legislate their individual relationships with their native people while continuing with harmful, destructive policies to dispossess them and obstruct their claims.

**Fishery Ecosystem Plans**

Since 1976 the Western Pacific Fishery Management Council has been involved in the promotion and support of native fishing rights in American Samoa, Guam, Northern Mariana Islands and Hawaii. Through involvement and discussions of this issue with indigenous people, we learned there was a similar dependence of aboriginal people across the region on the sea to fulfill their nutritional and other needs. However, each island area has different histories, different aspirations and different objectives that they want to achieve through the expression of native rights.

The Western Pacific Regional Fishery Management Council (Council) developed and supported the Western Pacific Community Demonstration Project Program (CDPP) through its authorization in the Sustainable Fisheries Act in 1996. Since 1997 the Council has worked to implement the CDPP and the Community Development Program (M-S Act, Section 305 (i) (2)). The CDPP is a grant program to fund native community demonstration projects and the Community Development Program gives the Council the regulatory authority to create opportunities for native communities to participate in fisheries managed by the Council. The Programs aim to increase the involvement of western Pacific indigenous communities in fisheries by demonstrating the application and/or adaptation of methods and concepts derived from traditional indigenous practices in resource management, conservation and utilization then applying the useful concepts to and creating opportunities for native communities to participate in fisheries managed by the Council. Community demonstration projects may demonstrate the applicability
and feasibility of traditional indigenous marine conservation and fishing practices; develop or enhance community-based opportunities to participate in fisheries; involve research, community education, or the acquisition of materials and equipment necessary to carry out such demonstration project. Demonstration projects may further the goals of the indigenous community and promote the development of social, cultural and commercial initiatives and enterprises to enhance opportunities for western Pacific communities to participate in fisheries, fishery management or conservation. Projects may also enhance culture, and support traditional and customary fishing practices or seek new methods and activities. Projects must involve the aboriginal community and the marine resources of the U.S. Western Pacific.

In 2005, the Council moved from a species-based fishery management plan to Archipelagic-based fishery ecosystem plans. This administrative change provided the Council the opportunity to include traditional communities in the management and regulation of fisheries. Any Community-based initiative is about empowering the community. The Council’s community program addresses the need for the development of Fishery Ecosystem Plans. Fishery Ecosystem plans are place-based fishery management plans that will allow the Council to better incorporate ecosystem principles into fishery management. The National Oceanic and Atmospheric Administration (NOAA) has recognized that human communities are part of the Ecosystem.

The Council’s efforts to develop fishery ecosystem plans (FEP) are centered on community collaboration, participation and partnerships. The efforts result in the development of projects such as community-led data collection and monitoring programs and revitalization of traditional and cultural fishing practices. Finding and partnering with communities and organizations is a time-consuming and painstaking process. Currently, outreach to communities in the form of presentations and participation in school and community activities and other fora is ongoing in order to identify projects that are candidates for Council support.

The Council is interested in traditional management of fishery resources and has initiated the Ahupua`a Puwalu program. Traditional land tenure in Hawai‘i was based on the ahupua’a, a division of land that ran from the sea to the mountains, which enabled native communities within it to obtain all things necessary for survival and perpetuation of the culture. These land divisions were often demarcated with an ahu, a stone marker or cairn, that was topped with a pua’a symbol, a pig symbol, the skull of a pig or one of its symbolic cultural forms. The ahupua’a also represented the structure of Hawaiian society and cosmology. The division of labor, cultural practices and spirituality was based on the structure of the ahupua’a. The accumulated knowledge of centuries of scientific observation of the environment and ecosystems by native Hawaiians would be of immense value to contemporary natural resource management practices. The Council’s efforts to identify native ahupua’a practitioners have revealed a large body of knowledge still extant and cultural practices still exercised. As shared by one practitioner, even in the changed and depleted environment in Hawaii, ahupua’a practices “still work.” The Ahupua`a Puwalu program will:
1. Identify *ahupua`a* practitioners and provide a forum for these practitioners to discuss traditional practices. Out of this discussion the Council hopes to have recommendations for regulations and legislation to allow and support the continued practice of traditional *ahupua`a* principles;

2. Develop an educational component for the development of curricula to provide educational materials about *ahupua`a* concepts and practices, and;

3. Involve State, County and Federal agencies in the development of policies that would allow the continuation of *ahupua`a* practices in Hawaii.

The Council’s efforts in the *Ahupua`a Puwalu* will provide the Council with a template in managing natural resources more effectively and for the benefit of traditional communities in Hawaii and the US Western Pacific.
Sweeping up from deep chasms, across reclined shores, water is the birthplace of life. This primordial connection remains within us, energizing every cell of our body. – An internal sea, bathing living cells with life giving nutrients. Our enduring relationship with the ocean arises from the sea’s vast power to sustain living creatures, from microscopic plankton to large predators at the top of the food web.

Before industrialized fishing, Hawai‘i’s fishermen were respected for their ability to provide food, and for their ability to fish without depleting fishing grounds. They fished cooperatively within their ahupua`a. They fished in ways that nature could sustain.

In Hawai‘i the nineteen-forties marks the start of a sharp decline in nearshore fish. Changes in the economy and fishing gear radically altered our relationship with the sea. Rapid development destroyed critical fish habitat and fragmented older communities. Some fishermen tried to hold onto traditional fishing values, but found themselves isolated by the lack of community support. For most fishermen, fishing methods became intensive and increasingly competitive.

Talking with fishermen about their fishing values opens up the discussion of sustainable practices. We need to involve everyone if we are to create management practices that work. In an interview with Bill Aila, a fisherman from Wai‘anae and Harbor Master for the Wai‘anae Boat Harbor, he related his feelings for his community and Hawaiian fishing culture in this way:

“The Ancient system [of fishing] was based on an ahupua‘a system. Before a visitor would come into someone’s ahupua‘a [land division extending from the mountains to the sea, primarily delineated through the concept of watershed management] they would ask permission. Usually, they were granted permission, but there was this protocol of respect where if somebody asked, and you had an abundant supply, you would allow them to come in and partake, but they would be respectful and not partake too much at your expense. Today’s culture is a little bit different in that many people, fishermen included, believe that the oceans resources are free for everyone to take. I think we are at a juncture now of how do we manage both systems. There is a part of our community that wants to go back to the ahupua‘a system, but there’s a large part of our community that doesn’t understand the ahupua‘a system, or protocols that are associated with that system. That’s the development or evolvement that’s going to occur in the next twenty years.

From an extended `ohana [family] position it’s important to carry on the traditions, the mana‘o [thoughts] and the spiritual side of fishing. Until recently I did not know that there was a spiritual side of fishing. Only now am I beginning to learn about those aspects. I think it has made me a better fisherman. It has certainly made me a better person.” – Bill Aila

On a planet with finite resources and growing human populations we face the challenge of learning to live in ways that nature can sustain. The ocean is a master of sustainable resource management,
but we are depleting the sea faster than we are learning from it.

Industrial technology like petrochemicals and refrigeration make it possible to harvest large quantities of sea animals and edible limu. It is no longer fish against fisherman, but fish against machine. We harvest an ebbing tide, which can’t keep pace with high-tech gear using nonrenewable power and resources. Our life with the sea is out of balance.

In the wild, the relationship between predator and prey is based on the principal that most prey are meant to get away. Large fish catches defy this rule. Modern fishing technology is so exhaustive in its capacity that even the strongest and most able can’t escape. Present fishing methods are out of sync with nature. In order to preserve fishing for future generations we need to adapt our fishing methods to those the waters can support.

Most of the attention and financial rewards go to fishermen who catch the biggest and most fish. What acknowledgements are given to fishermen who maintain the health of fish populations and marine ecosystems? The wisdom to know when to let fishing areas rest requires an intimate understanding of the ocean.

Some fishermen have taken the responsibility to protect fish populations. By developing community based management programs along side marine scientists, they protect traditional lifestyles. Many fishermen are learning ancient practices that are sustainable with Hawai‘i’s underwater environments. It is no longer who can catch the most fish, but which fishermen and communities maintain the healthiest reefs and fishing grounds.

This kind of environmental spirit can be fostered in many different ways. At the annual Hilo Ulua Fishing Tournament, fishermen bring in bags of rubbish collected from fishing sites that are weighed to see which fisherman has brought in the most rubbish. Ha‘ena, Kaua‘i has been designated as a community based traditional subsistence fishing area, which encourages sustainable fishing through practices such as spear fishing without scuba tanks and the prohibiting of gillnets. Traditional methods of care and subsistence fishing are also an important part of life on the island of Moloka‘i.

Moloka‘i is an economically less developed island and many people depend on the ocean to feed their families. This is in keeping with the traditional values of the community there. Subsistence fishermen on Moloka‘i face the growing occurrence of having sport fishermen and commercial fishermen come over on motor boats from other islands and take large catches. With limited manpower from the State Department of Land and Natural Resources, fishermen are left on their own to handle introduced competitive fishing styles. In an interview with subsistence fisherwoman, Joyce Kainoa, she related the need for fishermen to come together in order to protect resources, and what sustainability means for subsistence fisherman.

“Sustainable yield? Subsistence living? All is interconnected. One is dependent on the other. If I practice because traditionally this is what it means to me as a Hawaiian: you not only take from the ocean, you replenish the grounds. I practice, I physically practice, replenishing the `ōpī [Hawaiian Limpet] on my grounds. Fishermen get on the boat [and ask yourself] ‘What can I do?’ If the fish are too small, throw them back. If you study the fish they tell you a lot about yourself.
Having fishermen come together and sitting down is step-one. You set aside your personal
differences. I want to share with you if what I say means anything to you. I need your help to
preserve these resources. Not for me, not for you, but for the next generation and the generations to
come. Because Hawai`i is famous for its fishing grounds. Well, it’s what was before. It can come
back to that way.

Our Hawaiian values are more applicable today, very important, that we don’t take any resources for
granted. It’s not going to be here. You can’t rely on the Department of Land and Natural Resources,
nor its aquatic division or any of the government agencies to come and do your job. It is your
responsibility! It is not easy to take care of a large ocean of water, or to keep and maintain the species
of marine life that live in that water. But there are those that you can know which stay in the area
that you live. In order for them to stay there you have to work in cooperation. That means you have
to police yourself from fishing, or overfishing, or killing the grounds, because that is your survival.”
– Joyce Kainoa

Joyce Kainoa’s cultural values and traditions of observation and sensitive cooperative management
are reflected in the fundamental principals of ecology, and the give and take of life on planet earth.
She has often taken it upon herself to speak to other fishermen who don’t know the productivity of
a species or fishing area to educate them on how much they should be taking and how much they
need to leave. Cooperation can work if fishermen themselves see it as their future. Many
fishermen have an innate understanding of ecology through constant exposure to life in the wild. It
is simply a matter of making the connections between organisms and living cycles.

Life is perpetuated by the inborn power to reproduce and the collective power to organize. The
two exist in balance – unlimited creative energy on the one hand, and the capacity to channel and
transform that energy on the other. This collective power is called an ecosystem. Ecosystems are
the communities of plants and animals that circulate and maintain food webs. These biotic
communities are so successful in harmonizing life that it is impossible for living creatures to live
without each other.
For fishing practices to be sustainable they need to be based on the functioning of ocean ecosystems
not on the demands of the marketplace. Environmentally minded fishermen understand this. For
them, there is no separation between fishing and conservation. Fishing practices become one with
nature - a partnership based on mutual support, not opposing forces.

The ocean is made up of many interdependent communities. This makes piecing together ocean
food webs an enormous challenge. Marine biologists once thought that they could easily determine
sustainable yields for fish catches. All that was needed was to establish the steady-state population
and then figure out how many fish could be caught each year without reducing that number. We
could harvest the interest without touching the capital. But fish populations fluctuate in the wild.
To predict their populations one must know what forces create change in the ecosystem and affect
the flow of energy and nutrients throughout the food web.

Because of great uncertainties and the potential for irreversible harm, caution must be used in how
we harvest the seas. Supporting declining wild fish stocks has become an area of expertise in the
field of aquaculture. The field is controversial because of the dangers of introducing disease into wild
fish stocks and potential genetic modification. According to aquaculture specialist, John Corbin, in a
personal interview:

“Seventy or eighty percent of the world’s fisheries are at maximum sustainable yield or are being depleted. They’re beyond maximum sustainable yield. How are they going to recover? It hurts when people fish in fisheries so the management approach has been don’t fish; restrict. The reason is that we don’t really know how to manage fisheries. We don’t know how it works.

In my view, and this is fifty years out or less, and it could happen much quicker, is that hatcheries will support all the major fisheries in the world. To do that we need to break this technology gap. We need to not only grow mullet, we need to grow tuna, sailfish... There’s a lot of work to be done. By 2025 we need sixty to seventy million metric tons more seafood just to keep up with per capita consumption at today’s levels. Fisheries aren’t going to do it. Fisheries have plateaued.” – John Corbin

Surrounding the Hawaiian Islands there are three primary underwater ecosystems used by fishermen, the nearshore ecosystem, the coastal deep bottom ecosystem and the coastal pelagic ecosystem. These ecosystems overlap. Each creature playing a part in the great motion of the sea.

Around the large Hawaiian Islands the nearshore ecosystem extends from the headwaters of mountain streams to the outer edges of the reefs. It contains many different habitats for living creatures. The way to understand the nearshore ecosystem is to watch freshwater from the mountains flow into the sea. Algae depend on nutrients brought down by stream water. Mullet, aholehole and other herbivores eat the algae. In turn, limu eaters sustain large predators like ulua.

For sustainable fishing to be successful, it must be met by sound environmental practices on the land. This holistic approach is part of the ahupua`a concept and includes things like the rehabilitation of shorelines and streams to increase fish populations.

The diversion of stream water for sugarcane and urban development has had catastrophic impact on nearshore fish life. Sedimentation and polluted runoff from urbanization onto once magnificent coral habitat has wiped out vast areas of reef surrounding the main islands. This is particularly evident in Kane‘ohe Bay on the Island of O‘ahu. By repatriating water to ancient streambeds and replacing smooth concrete canals with more environmentally friendly designs and materials such as irregular lava rock, pooling areas and earthen berms, fish are able to return to their former habitats.

Early Hawaiians built large fishponds around stream mouths. Organic ponds are better than refrigeration for storing fish, because they maintained live reproductive stock and increased protective estuaries. Sustainable fishing means not just changing the way we catch fish, but also changing the way we store and market them. It is better to maintain live reproductive populations than to freeze or can fish.

“A fish in the freezer cannot lay eggs anymore, so if you don’t need to take it you should leave it so that it can create the next generation that our children will be harvesting. I’ll never forget the story of a very well known spear fisherman who one day went out to spear some fish and when he came back
he was cleaning the fish and his son came home from school. When he opened the cooler he said, ‘Dad, how come you speared all this? We don’t need all this. If you keep doing this, there won’t be anything left for me ten years from now.’ And it caused that well-known spear fisherman to stop and thing that his son was right. That he didn’t need to take it and that those fish couldn’t lay eggs anymore. So as a result he’s stopped doing that. He has a rule for himself now that he doesn’t put anything in the freezer.” – Bill Aila

Instead of supporting a few very prolific species, coral reefs support high diversity. It is easy to unbalance a reef ecosystem by over fishing one particular species. The northwest Hawaiian atolls, while teeming with fish life, are delicately balanced. Potential adverse effects of over fishing on atoll ecosystems have prompted the State of Hawai`i to establish the Northwestern Hawaiian Islands as a marine refuge.

Intensive harvesting of lobster reduces available food for the endangered Hawaiian monk seal. Crustaceans and other invertebrates are important links between the microscopic feeding levels and larger animals in the food web. Declining populations of crustaceans and octopus can have negative impacts on monk seals and larger fish. Commercial fishing, which relies on large catches isn’t sustainable by reef ecosystems. Reefs better support subsistence fishermen who make small infrequent catches of different kinds of fish to feed their families.

The best way to catch reef fish is to use fishing methods that are selective and do not disturb the coral habitat. Swimming through the water is low impact. Touching or stepping on the reef is high impact. Fishing methods that come in contact with the bottom such as nets and traps can damage coral and disturb tiny creatures at the bottom of the food web. Spear fishing without scuba tanks is a good method of reef fishing. Spear fishermen see changes in the ecosystem firsthand, and know when fishing grounds need to rest.

Marine predators have much to teach us about how to fish the oceans. Sharks practice sustainable fishing by catching selectively. They single out individual animals, catching only enough to satisfy immediate hunger. Constantly on the move as they hunt, sharks prune the ocean and help to maintain the health of the ecosystem. The white tip reef shark eats small octopus – one of the most prolific animals on the reef. The presence of a resident shark population means that there are a lot of other kinds of animals to feed the sharks. The absence of sharks can be a warning signal that smaller fish are becoming depleted, and fishing pressure needs to be reduced.

Top predators, like sharks are relatively few in number compared to the amount of other animals. It takes a large amount of other life to sustain them. This is known as the carrying capacity of the environment. How many sharks can one reef support? How many fishermen?

When a fisherman enters the water he takes on the role of a shark. The ocean can handle a limited amount of fishermen in the same way it can handle a limited amount of sharks. A fisherman must know the carrying capacity of the area in which he fishes, and be able to see when fishing must be stopped and areas rested.

One of the most damaging ways to fish nearshore is with large plastic gillnets such as lay nets. Gillnets can quickly deplete fish populations by over harvesting and wasted by-catch. Instead of maintaining live reproductive populations in the ocean, lay nets strip fishing grounds to stock the
Traditional Hawaiian sennit nets were heavy and time consuming to make, which limited their size. They were used infrequently and required the labor of many people who witnessed their correct use. A large extended `ohana may have taken care of a single net.

Modern technology allows a few individuals to lay miles of different kinds of plastic in the ocean. Non-biodegradable fishing gear creates a perpetual death zone for marine life when it becomes stuck. Using biodegradable gear is a way that fisherman and companies that produce fishing gear can help to protect marine life. Local fisherman, Mike Sakamoto, reports:

"We find nets abandoned, fish still stuck in the nets, rotting in the nets. That doesn’t show any respect. William Aila and all those guys in Wai`anae, they pick up a lot of abandoned nets, and it’s not by overseas people. It’s by local people. It’s Hawaiʻi people who find it’s cheaper to buy another net than to go out and get it. And eventually you deplete the resource. The problem with a gillnet is that it’s a random kill. Throw net is kind of a select kill, but a gillnet kills everything. Everything gets stuck in it, everything from turtles to whales. They’ve even caught whales in gillnets." – Mike Sakamoto

Enforcement of fishing violations has been a problem in Hawaiʻi. This is due in part to the lack of sufficient staffing and the large size of areas to be overseen. New changes that have been suggested include educational programs and community environmental service for violators. Fishermen who try to encourage responsibility often feel frustrated by the system, as expressed by Bill Aila:

"The current judicial system that we have tends to look at a fisheries violation and say that’s so minor, pay the twenty-five dollars and go on your way. In some cases I’ve seen or I’ve been told of judges giving back equipment that’s illegal to begin with. That’s wrong! In my eyes, there’s no difference between stealing from a bank and taking something out of season, or taking something undersized, or taking too much of something when you didn’t need to take it. It’s all one and the same." – Bill Aila

The judicial system has begun to take a more serious view of commercial fishing laws within the longline industry of the pelagic ecosystem. Longlining affects not only national and international waters, but Hawaiian waters as well. Many species of pelagic fish come into Hawaiian waters either to spawn or feed.

The coastal pelagic ecosystem includes species like dolphins, sea birds, swordfish, tuna and marlin. Over 90% of commercially caught fish comes from this ecosystem, primarily caught by longliners. Far ranging commercially caught fish need to be protected through international regulations and cooperative management. But there is much that can be done locally, especially in the area of sport fishing.

Sport fishing has changed in the last decade. Trophy hunting is slowly being replaced by
conservative practices of catch and release and the use of barbless hooks. Some fishermen are downgrading their use of technology and using more challenging methods of fishing which require more fitness and skill.

Fishing tournaments present a chance to draw attention to sustainable fishing methods. By bringing fisherman, resource experts and fisheries managers together much can be done to protect the animals of the sea and the future of fishing in Hawai‘i. Current research indicates that Pacific blue marlin come into Hawaiian waters during the summer to spawn. Holding fishing tournaments in the late spring and early summer reduces future marlin populations by removing large reproductive females at the start of the spawning period. It would be better ecologically to hold tournaments in the fall after spawning is completed, or require fishing tournaments to practice catch and release. Further research is needed to determine the survival of large fish released back into the water after they have been caught.

Active collaborative management is important to preventing fishing bans. Closures are often the only way to protect fish stocks when educational and cooperative management fail. This is what has begun to happen to the coastal deep bottom ecosystem around the main islands with the establishment of no-take zones. The coastal deep bottom ecosystem descends into four hundred meters of darkness. There are no plants, because of the lack of sunlight. Reproductive turnover of bottomfish in this system is relatively slow. Benthic animals such as gold, pink and black corals live at its deepest levels, providing important habitat. This ecosystem is home for several species of Hawaiian snapper and the endemic Hawaiian grouper, hapu‘u.

Because of intensive commercial harvesting, yields of Hawaiian snapper are in decline around the main islands. Fishery managers are trying to stabilize fish populations and need the help of fishermen. Recovery can take a long time, and prevention is key. It’s up to fishermen to respect closed areas, and to report their catch, so population decline can be spotted early. A signal that fish are being depleted is that the sizes of individuals become smaller. Large spawners become rare. If fishing pressure is reduced at this stage before catch goes down, recovery could be faster.

No-take zones, stricter guidelines and enforced protection have brought some success with stocks of snapper in some protected zones rising. The long-term survival of bottomfishing in Hawai‘i, given the slow turnover of the ecosystem, is the implementation and enforcement of marine protected areas, and the use of individual fishing quotas.

A technique for studying fish populations, used by fisheries managers, is monitoring “catch per unit effort.” That is, how much work does it take to catch the same amount of fish? If it takes more and more work to catch less and less fish, the stock is going down. While this provides important information, the drawback with this method, in terms of management, is that information is gathered after the fact. The fish population can be in a steep decline, before trends are spotted and remedial action takes place. The lack of communication and coordination between scientists, various government agencies, and communities delay responsive measures in many cases.

The long response time suggests the need for a proactive hands-on approach to the management of
fisheries, rather than primarily relying on “catch per unit effort.” A proactive approach is based on the functioning of marine ecosystems, and facilitates better communication and coordination between all parties to improve management capabilities.

A proactive ecosystem approach to fisheries management looks at not just what is coming out of a fishery, but also monitors what is going in. What is the flow of nutrients into the fishery? What is the effect of pollution, changes in climate pattern, ocean currents etc.? How does the species interact within the ecosystem as a whole? How are other trophic levels responding to fishing pressure? What is the level of realistic uncertainty in assessment models? What is the lag time in detection of trends?

Computer modeling programs work with these parameters, but are not yet in use by all fisheries managers. Ecosystem trophic mass-balance analysis programs and other ecosystem modeling programs help to project what is going on in an ecosystem, allowing fishing pressure to be adjusted accordingly. Ecopath is one such program. It was developed for marine ecosystems at the University of British Columbia.

A proactive ecosystem approach brings additional information in at an earlier time, helping to reduce the lag time of spotting trends and corrective action. It utilizes hands-on involvement, coordinating all parts of the community into a management program. In the case of Hawaiian bottomfish, an ecosystem approach to management takes in the natural functioning of the coastal deep bottom ecosystem and restricts intensive harvesting because of the slow processes within the ecosystem.

An example of a nearshore fishery which has gone into steep decline because of insufficient proactive management is the `ophi or Hawaiian Limpet. Recently a bill banning the sale of `ophi was passed by the Hawai`i State Legislature. It might be useful to look at the history of this fishery as a case study of species decline, and how a proactive management plan could help the `ophi recover from its current low population levels.

There are four species of Hawaiian Limpet in Hawai`i. – Cellana exarata, Cellana sandwicensis, Cellana talcosa, and Cellana melanostoma. All are endemic. The species taken for commercial use are primarily C. exarata and C. sandwicensis. Their habitat is the surge zone on the rocky shoreline, primarily on the windward sides of the islands. `Opihi feed on calcareous algae, diatoms and blue-green algae. They feature prominently in Hawaiian culture, and are of dietary, utilitarian and mythological importance. Ancient Hawaiians actively farmed `ophi by reseeding beds.

The limpet’s sharp decline has been known for over 25 years. Richard Shomura describes a 90% decline from over 147,000 pounds commercial harvest in 1900, to 14,000 pounds in 1986, and then below 11,000 pounds in 1997. Dr. E. Alison Kay conducted `ophi studies in the ‘70s funded by grants from the University of Hawai`i Sea Grant Program and the State Legislature. Kay recommended bag limits, size limits, seasonal closures and protected areas in 1976. The State Department of Land and Natural Resources established a size limit for collection of not smaller than 1 inch (32mm), but seasonal closures, bag limits and protected areas were not established. No recovery was observed. Then, in the spring of 2006, the bill to ban all commercial sales of `ophi was passed by the legislature, but Governor Linda Lingle threatened to veto it.
A comprehensive proactive recovery plan first sets recovery goals, such as recovery of `opīhi to pre 1900 levels; sets periodic reviews to see if benchmarks for recovery are being met; and creates accountability procedures. Creating management standards could reduce the lag time between research and management implementation.

Recommendations for a proactive plan that would meet recovery and sustainability goals, and not be secondary to the demands for `opīhi in the marketplace include: 1) Recolonizing denuded areas, 2) A network of interlaced protected and fished zones, 3) Size limits that include the protection of large spawners, 4) Maintaining one-quart bag limits and no commercial sales until recovery goals are reached, 5) Sets `opīhi density limits of colonies, and educates fishermen to recognize healthy colony density, 6) Monitoring to spot peak and off-peak gonad development with responsive fluctuating closures during spawning, 7) Conducting of additional research, 8) Community management programs, which include education and participation by local schools, 9) Management of the ecosystem as a whole, 10) Monitoring fishing pressures on other species resulting from the regulation of `opīhi.

The banning of commercial sales of local `opīhi allows for imported limpets to be brought in and sold. Have we unfairly moved Hawai`i’s problem to someone else’s fishery? How will consumers tell if seafood they are buying comes from a sustainable fishery or not? This can be accomplished by requiring fish and fish products sold in Hawai`i, whether local or imported, to be labeled as coming from an accredited sustainable source. When people choose to buy fish only from sustainable fisheries, fishermen will see the need to be accredited. Eventually, accredited fisheries will become more profitable due to market demand.

The Monterey Bay Aquarium in California has created “Seafood Watch,” a consumer’s education program and website. “Seafood Watch” advise consumers as to which fishes are better choices to consume and which species to avoid because of overfishing or the use of unsustainable methods of harvesting. Their pocket guides include popular commercial fishes, but many of the small regionally important fisheries are absent. Creating local seafood watch programs could help increase local awareness, be inclusive of small fisheries, and contribute to community based management programs.

During the emergence of industrialized fishing, fisheries were managed to maximize commercial yields. The ocean was seen as inexhaustible. These paradigms are now changing to paradigms of sustainability and cooperation. Part of this change is replacing terminology of market use to terminology of co-existence and interdependence. Words like stocks and resources, which are anthropocentric in their relationship with nature, are slowly being replaced with words like populations and ecosystems. Do we see ourselves as part of nature or outside the laws of nature? How do we share the living nutrients and energy on the planet? Our beliefs influence the way information is collected, analyzed, interpreted, and applied to the management of human activities in marine ecosystems.

Our continued relationship with the ocean rests upon the philosophies of sustainability and
cooperation. This was true in old Hawai`i, and it remains true today. Paradigm shifts brought about through education can have enormous impact on the nearshore ecosystem. It is this ecosystem that people in Hawai`i live in contact with and impact on a daily basis. It is the primary ecosystem relied on by subsistence fishermen to feed their families. Difficult choices lay ahead. I spoke with educator and caretaker of He`eia fishpond, Mary Elizabeth Brooks about this.

“I believe that the inshore fishery is the fishery for the common man. It is the fishery of the Hawaiian style. It’s the accessible fishery. It’s the fishery for people who eat the fish they catch. It’s the fishery for people who have a spiritual, psychological, emotional, and physical relationship with the fish that they catch, and the waters that they catch them from. It’s the fishery for people who value what makes Hawai`i, Hawai`i. It’s the one for people who go walking to catch their fish. It’s the one for people who may or may not be able to afford boats. It’s the one for people who take only the amount of fish they can carry.

When we allow fishing practices to go on which let certain groups go out in boats, with certain types of equipment and take massive amounts of fishes we’re not leaving many fish for that fisherman that I just described. It’s demoralizing to go fishing and not catch anything. It’s invigorating, it’s healthy, it’s important for a sense of identity that you can go to waters that you identify with, have a relationship with the life in them, take some of that home and feed it to yourself and your family. That completes the cycle, that makes you feel related to the lands, that makes you feel care for those lands, and that keeps your eyes open and keeps you clear about your priorities. And even if you have to go to another kind of a job that takes you away from the land, you have that connection and Hawai`i stays the way it should be, the way it can be. When there’s no more fish and the grand children forget how to fish, and they don’t catch fish anymore, the cycle’s broken, and then what little thread we have to the beauty of the ancient past is cut. People no longer relate to the sea as the place from which their spiritual and physical renewal comes from, they relate to the grocery store.” – Mary Elizabeth Brooks, Educator and Caretaker of He`eia Fishpond, O`ahu.

Schools are the social epicenters of their ahupua`a through the transference and sharing of knowledge. Expanding marine education in the early grades could help to bring about profound change in the way we interact with the ocean. Schools provide opportunities as facilitators for community based management programs and needed research. Sustainable fishing means basing fishing practices on the functioning of marine ecosystems. It is something that must be taught and learned. It is the awareness of ones place both in nature and within the human community.

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The conceptual development of Island Tourism Status Indicators (ITSI) and Multi-functional Interactive Process Cycle (MIPC)

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The conceptual development of Island Tourism Status Indicators (ITSI) and Multi-functional Interactive Process Cycle (MIPC)

The conceptual development of Island Tourism Status Indicators (ITSI) and the Multi-functional Interactive Process Cycle (MIPC) results from applying and progressing Butler’s Tourism Area Life Cycle (TALC) with other recent life cycle theories. In island tourism especially, sustainability and optimization approaches might be a first step in terms of a destination life cycle and its development and management due to its relatedness and connection to strategy and policy at each stage of the cycle. Therefore, applying the TALC to sustainable and optimized policy for creating an ideal stage of tourism at a destination could be possibly through finding new inclinations on the curve and identifying the following management procedures for overcoming the difficulties of island tourism. For creating the most efficient level and status of destinations that are satisfying new customer’s behaviors and trends is one of the main issues for islands and other destinations. For achieving this process, It is suggested here that the concept of Island Tourism Status Indicators (ITSI) and a Multi-functional Interactive Process Cycle (MIPC) which are mainly about understanding each stage as a chaos and changing process, diagnosing the tourism status compared to other industries, analyzing tourism impact and its sustainable and optimized level, and developing optimized tourism management policy and strategy through several indicators and factor dimensions.

This paper will present four main approaches to the TALC and its application to ITSI and MIPC in island tourism perspective. First, the origin of TALC relating Product life Cycle (PLC) and its legacy from criticism to progress in tourism research, secondly, the development of ITSI and factor dimensions, thirdly, conceptual mapping of the Multi-functional Interactive Process Cycle, and finally, development of ITSI and its application to MIPC, and then we will reach the future direction of revising TALC as an MIPC. Throughout this paper, by having some theoretical process of ITSI and MIPC, we may find several island tourism issues on vulnerability, sustainability, and optimization.

**Keywords:** Island Tourism Status Indicators (ITSI), Multi-functional Interactive Process Cycle (MIPC), Tourism Area Life Cycle (TALC), Sustainability and optimization

**Introduction**

The background of the TALC model and its criticisms are very important in order to understand how to apply it to island tourism. Butler’s original article about the TALC obtained the data from the small peninsula, Cancun, Mexico, and other Mediterranean Islands, and the TALC has been applied to island tourism by many authors and researchers (Choy 1992; Cooper & Jackson 1989; Ioannides 1992; Johnston, CS 2005; Weaver 2005). Butler (1980) suggested the TALC model be based on the product life cycle model, the six different stages in tourism destination, *exploration, involvement, development, consolidation, stagnation, and rejuvenation or decline* stages. Each stage has its own characteristics and attempts to relate growth, change,
limits and intervention in a tourism context, and to bring together the demand and supply sides of the equation. Butler indicated (Butler 2000) that there are eight elements to the TALC model. The key concept above all, is dynamism, a second key element is process, and the third element is that of capacity or limits to growth. Fourth, although implicit rather than explicit, is the idea of triggers, factors which bring about change in the destination. Fifth, there is management, and if there is one element which has been ignored in the subsequent discussion and application of the model, it is this one. In reality, most tourist resorts are not managed in the strict sense that there is some agency with the responsibility. Sixth, it is a long-term viewpoint in the planning and management of the destination. Seventh is what may be called the spatial component, originally a major element in the first version of the model. The proposition in this respect is that, as development at a specific destination stagnated, there would be a spatial shift of development to a new destination. Finally, there is the element of universal applicability, namely that the model was essentially applicable to all tourist destinations.

On the other hand, the TALC and a large part of tourism research have inherited the Newtonian and Cartesian research tradition, which has dominated much of social science. As that result, tourism researches have been focused on aspects of the exhibit order, linearity and equilibrium, while ignoring the changing, combining and exogenous factors. Although traditional research has arguably been instrumental in providing a quantitative approach in the progress of tourism research, there are some deficiencies in understanding turbulences and dynamics of changing process in the tourism system.

As a more useful conceptual foundation and for understanding change in, and dynamics of, tourism systems, the chaos theory provides a good opportunity of developing more multi-functional approaches to tourism destination research. Chaos theory suggests an alternative perspective, which enables us to gain a deeper understanding of the change process in the tourism life cycle. Small changes, individual differences and random externalities are recognized as having the potential to precipitate major realignments in systems through disequilibrating positive feedback process. Non-linear relationships therefore prevail in such systems, which are driven by self-organizing, adaptive tendencies to produce new complex (‘emergent’) configurations (Butler 2001; Faulkner, Bill, Moscardo & Laws 2001). This perspective offers a more a holistic approach in analyzing and finding solutions to the changing process system in destinations.

For doing this process, It is suggested here the applied Multi-functional Interactive Process Cycle (MIPC) and the concept of Island Tourism Status Indicators (ITSI), these conceptual applications are mainly based on chaos and complexity (Faulkner, B & Russell 1997; Russell 2005), changing process (Haywood 1992, 2005; Johnston, CS 2005), and re-orientation and rejuvenation (Agarwal 2005) of the destination life cycle. The MIPC and ITSI which are mainly about understanding each stage as a chaos and changing process, diagnosing the tourism status compared to other industries, analyzing tourism impact and its sustainable and optimized level, and developing optimized tourism management policy and strategy through several indicators. The ITSI consists of four factors, key, managerial, external, and internal and provide the optimized status and level on island tourism using the MIPC through the combination, interacting and changing process of the four factors.
For understanding and progressing TALC, sustainability and optimization approaches might be the first step in terms of developing tourist destination management policy due to its relation and connection with the management and strategy of each stage. Therefore, applying the TALC to the most optimized policy for creating ideal tourism destinations could be possibly finding new inclinations on the curve and identifying the following management procedures and creating the most efficient level and status of destinations that are satisfying new customer behavior and trends. Skilful planning from the beginning, appropriate management, including identification of limits to growth, the setting of realistic targets, appropriate change in response to and in anticipation of market shifts, and good fortune are all essential to ensuring a destination a long and successful life. It has certainly been used in efforts relating to the revision of resorts (Agarwal 2005), and there is now some expectation that in fact the applied MIPC could be used in a predictive manner, that indicators of change can be identified and that the stages can be anticipated. This is clearly an aspect that warrants further applications and explanation and would provide additional support for the continued relevance of the destination life cycle into the future.

Origin of TALC and its legacy from criticism to progress

The 1960s were not a period of great conceptual development in tourism research, primarily because there was very little tourism research being carried out in the academic realm. In the context of the development of the resort cycle, two key tourism articles, those by Christaller (1963) and Plog (1973; Plog 1973) provided much of the stimulus. As well, the work of Stansfield (1972; 1978) was also of particular relevance, and it was Stansfield who coined the phrase ‘the resort cycle’. Also important was the very early work of Wolf (1952), who described both the physical and social changes in a major tourist destination in Canada, calling the changes appropriately ‘The divorce from the geographic environment’. The decision to discuss the evolution of resorts as a life cycle came from the well-known business concept of the life cycle of a product. Another concept was that of the life cycle of animal species in the wild. The late ecologist Fraser Darling, particularly his superb study A Heard of Red Deer (Darling 1936) is such an example. These two disparate and rather unrelated concepts together provided some rationale for the challenge to what seemed the then current mode of thought with respect to tourist destinations. (Butler 2001)

It was the era of tourism markets having reached maturity, with many mass tourist resorts developed in the late 1960s and 1970s reaching stagnation in the 1980s in most European countries and especially in coastal areas in the U.K and in the 21st century, still seeking strategies and other solutions for revitalizing the markets (Department for Culture Media and Sport 2000; Irish Tourist Board 2001). At that time, decline and rejuvenation theory had began to receive attention in the literature as governments and other public and private tourism sectors strived to adjust to changing market demand and in marketing, areas suffering the same phenomenon, looked for new models for replacing the original Product Life Cycle (PLC). The tourism literature has followed on and from the business literature on the PLC.

Butler (1980) suggested the TALC model be based on the product life cycle model, the four different stages in tourism destination, exploration, involvement,
development, consolidation, stagnation, and rejuvenation or decline stages. Each stage has its own characteristics and attempts to relate growth, change, limits and intervention in a tourism context, and to bring together the demand and supply sides of the equation. In Butler’s view on his writing (Butler 2001), the first key concept of the TALC is dynamism, or change of both sides of tourism, demand and supply. A second key element is process, and the third element is that of capacity or limits to growth. Fourth, although implicit rather than explicit, is the idea of triggers, factors which bring about change in the destination. In terms of rejuvenation, and the shifting from stage to stage they are of particular relevance. They were envisaged as including innovations in areas such as transportation, and in marketing, as well as initiatives at the local and sequently regional, national and international levels by developers. This last area was not discussed in the tourism literature and has only relatively recently been given the attention it deserves (Russell & Faulkner 1998; Weaver 1988). Fifth, there is management, and if there is one element which has been ignored in the subsequent discussion and application of the model, it is this one. In reality, most tourist resorts are not managed in the strict sense that there is some agency with the responsibility. Management of tourism in the true sense rarely exists except at specific facilities. Sixth, it is a long-term viewpoint in the planning and management of the destination. Seventh is what may be called the spatial component, originally a major element in the first version of the model. The proposition in this respect was that, as development at a specific destination stagnated, there would be a spatial shift of development to a new destination. This could occur in the immediate vicinity, for example, in the Gold Coast region of Queensland from Coolangatta to Surfers Paradise (Russell & Faulkner 1998) or from one region to another, for example from southern France to Spain, to Greece and then to other destinations around the Mediterranean. Finally, there is the element of universal applicability, namely that the model was essentially applicable to all tourist destinations. Any model has to be applicable beyond one situation.

The PLC concept was greeted with enthusiasm on its introduction in the 1950s and 1960s as an early element of managerial research (Cooper 2005). It continued strongly but in the 1970s and early 1980s, the literature faded away as many people recognize the limited value and application of the concept (Coles 2005). This disillusionment is expressed by Gardner (Gardner 1987) who suggests that the PLC looks ‘for rather simplistic and uni-dimensional answers when in fact marketing phenomena are complex, multi-dimensional and non-deterministic’. In the early 1990s, in the tourism literature, these criticisms of the life cycle were echoed by Bianchi (1994) and Ioannides (1992) who called for a more integrated system for the understanding of resort dynamics (Cooper 2005). Other authors have criticized the cycle for failing to provide an explanatory framework. Choy (1992) especially has focused on the Pacific Islands for identifying differences between the TALC and other cycles in island tourism. It is clear that tourism academics have been aware of the misgiving of the PLC in the marketing literature and that marketing scholars have attempted to advance product theory and concepts further. However, there have been precious few attempts to build on research progress in marketing to further the tourism agenda and none of the business literature was ever cited (Butler 2005a) in tourism areas. For the application of the original PLC, Kotler (2003) introduced three different PLC patterns, growth-slump-maturity, cycle-recycle, and scalloped pattern (Figure 1) in his writing on positioning and differentiating through the PLC. The three different PLC concepts were gained from analyzing a product category, form, and
brand. Furthermore, there are more special categories such as *style, fashion and fad cycles* those are possibly match to the tourism product because their own changeable characteristics relating human beings’ behavior system. On the other hand, for overcoming the PLC’s weakness, the simplicity and unsatisfied definition on its stage, Chaos and Complexity Theory could be combined with TALC and PLC for having optimized strategies in tourism destination management.

The TALC and a large part of tourism research has inherited the Newtonian and Cartesian research tradition, which has the linear or quasi-linear, simple, toward equilibrium and driven by the negative feedback concept. Key propositions of the chaos and complexity prospective that distinguish it from the Newtonian and Cartesian view are based on biological models of living systems and understanding of unstable and positive systems (Table 1).

<table>
<thead>
<tr>
<th>Cartesian-Newtonian Model</th>
<th>Chaos-Complexity Model</th>
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</thead>
<tbody>
<tr>
<td>Newtonian physics(deterministic, reductionism, clockwork model)</td>
<td>Biological model of living systems(structure, patterns, self organization)</td>
</tr>
<tr>
<td>Simple, with a tendency toward linear or quasi-linear relationship between variables</td>
<td>Inherently complex, with a tendency towards non-linear relationships</td>
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<tr>
<td>Equilibrium and driven by negative feedback</td>
<td>Unstable and positive feedback</td>
</tr>
<tr>
<td>Individual differences, externalities and exogenous influences that create deviations from the norm are exceptional, noise generating factors</td>
<td>Individual differences and random externalists provide the driving force for variety, adaptation, and complexity</td>
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</tbody>
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(Table 1) The Cartesian-Newtonian versus Chaos-Complexity Models (Source: Faulkner and Russell (2001))

Faulkner and Russell (1997) introduced the Chaos and Complexity Theory in combining the TALC model and continued its application to entrepreneurship and crises and disasters in tourism. In tourism research the Chaos and Complexity Theory over the last decade has continued to gain recognition as a valuable research framework in a range of disciplines from physics and medicine to social sciences. McKercher (1999), Tinsley and Lynch (2001) have discussed the merits of the theory in understanding tourism systems and small business and destination developments. The Chaos and Complexity Theory embraces that which is unique in a destination’s development, allowing for unpredictable events and triggers to be seen as significant to the development process and subsequent outcomes. It also suggests that the
successive stages of the cycle can be seen as being triggered by seemingly random events, which cause a positive feedback process culminating in a new plane of tourist activity.

Russell notes the process (Russell 2005):

‘Each phase of the cycle represents a period of instability, which is being driven by fundamental shifts in the relationship between the various parties involved. An intense process of mutual adaptation among individual agents occurs as old niches become redundant, new opportunities emerge, markets shift and competitive relationships change. Meanwhile, specific manifestations of the butterfly effects and lock-in phenomenon at individual destinations will either impede or facilitate the growth of tourism, and add to the varying patterns of tourism development at this level’.

These processes of the Chaos and Complexity Theory are very important for understanding the formation of the destination status and changing inclination from one to other stages (Figure 3).

In terms of rejuvenation alterntiveness, Agarwal (2005), along with others (Cooper 1997; Hovinen 1981, 1982) raises the possibility of alternative and additional stages after the stagnation stage of the original model particularly with respect to the decline
stage option. This stage, termed as ‘reorientation’ added between the stagnation and the post-stagnation stages of the TALC model to represent continued efforts at restructuring (Figure 4).

Keller (1987) argued that an overlooked element, and one which could be related strongly to the stages of development, was control over development and sources of investment; an aspect also discussed by Debbage (1990; 1992). The original resort life cycle article could legitimately be regarded an early call for the principles of sustainable development to be applied in the context of tourism destinations (Butler 1997). One of the problems with the application of the concept of sustainable development to tourism, however, is the fact that it has rarely been applied or even thought of in the context of mass tourism, and thus the application of the principles to the classic tourist resort has been very limited (Vera & Rippin 1996) despite arguments that these are the areas most in need of the application of such principles (Butler 1997; Wheeller 1993).

There have been many papers documenting other examples of change on tourist destinations, many using the resort cycle model (Agarwal 1994; 1997; Butler & Hinch 1988; Cooper & Jackson 1989; Debbage 1990; Digence 1997; Din 1992; Hovinen 1981; Ioannides 1992; Kermath & Tomas 1992; Meyer-Arendt 1985; Ogletrope 1984; Richardson 1986; Toomam 1997; Weaver 1990; Wilkinson 1987; Williams 1993) and also there has been considerable attention paid to the model over the years, much of it producing valuable comment and criticism, proposing improvements and modifications, and suggesting alternative models (Agarwal 1994; Bianchi 1994; Bojanic 1992; Choy 1992; Cooper 1992; Debbage 1990, 1992; Getz 1992; Haywood 1986, 1992; Jarviluoma 1992; Keller 1987; Prosser 1995; Shaw & Williams 1994; Smith, RA 1992; Strapp 1988; Wall 1982; Weaver 1988). Prosser (Prosser 1995) summarized the criticism of the TALC model as being of five types: doubts on there
being a single model of development; limitations on the capacity issue; conceptual limitations of the life cycle model; lack of empirical support for the concept; and limited practical utility of the model. Despite these quite profound criticisms, however, the model is still being used, a point that Prosser (1995, P. 9) makes, ‘the extensive criticism leveled at the resort life cycle concept shows no sign of dissuading researchers from adopting the model as a framework for their research… the original model survives largely intact and according to some, offers the prospect of further development’ (Butler 2001).

**Development of Island Tourism Status Indicators (ITSI)**

It may be possible to connect several ideas of TALC with island tourism. As stated before, the TALC was suggested and verified from island case studies throughout the world. Due to the background of this model from islands, we may escape from the last two decade's debate on the cycle and develop the major issues in island tourism which demand new research models and approaches on optimization status and level through the high-tech oriented analysis of procedure of sustainability, vulnerability, and management policy and strategy. The applied concept of the Chaos and Complexity Theory and changing process analysis that are developed from the TALC principles would be adopted for finding critical factors in islands destinations on certain status and levels. Combination of Island Tourism Status Indicators with those key factors would suggest the need for management policy and strategy depending on each diagnosed status and level.

There are four steps for developing the optimization status and level of island tourism:

1. diagnose sustainable tourism status, level, and identity and tourism impact on islands; evaluate tourism policy on islands compared to other economic areas;
2. standardize tourism optimization indicators (factors from vulnerability, sustainability, environmental indicators); develop an applied and optimized management policy.

and the following four different performance analyses are necessary for identifying distinctive island tourism indicators (Table 2):

1) **Measurement of Economic Impacts of Tourism**
   a. Economic leakages
   b. Employment
   c. Economic benefits
2) **Environment Issues**
   a. Protecting critical ecosystems
   b. Energy/water management
   c. Climate change
   d. Health and safety
3) **Social Impacts & Attitudes**
   a. Effects of tourism on communities
   b. Community participation in tourism
   c. Building/architecture Impacts
4) **Mega Trends**
   a. Political and policy
b. Technological issues

c. Tourist trends
<table>
<thead>
<tr>
<th>Indicators</th>
<th>Key Performance</th>
<th>Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurement of economic impacts</td>
<td>Leakages</td>
<td>Internal/external/invisible leakage, imported goods, foreign exchange</td>
</tr>
<tr>
<td></td>
<td>Employment</td>
<td>Turnover, training, quality, pay levels, seasonality, employment and income opportunities</td>
</tr>
<tr>
<td></td>
<td>Economic benefits</td>
<td>Tourism revenues, tourism contribution to island economy, investment, TSA, SMEs, neighbors’ economic level</td>
</tr>
<tr>
<td>Environmental issues</td>
<td>Protecting critical ecosystems</td>
<td>Costal and marine resources, endangered species, sewage/waste management</td>
</tr>
<tr>
<td></td>
<td>Energy/water management</td>
<td>Energy saving, efficiency, renewable/water quality, supply, price, contamination</td>
</tr>
<tr>
<td></td>
<td>Climate change</td>
<td>Adaptation management, impacts on destination, risks</td>
</tr>
<tr>
<td></td>
<td>Health and safety</td>
<td>Health, food, disease, security, disaster, crime, tourist anxiety</td>
</tr>
<tr>
<td>Social impacts and attitude</td>
<td>Effects of tourism on communities</td>
<td>Social benefits, satisfaction, life style</td>
</tr>
<tr>
<td></td>
<td>Community participation in tourism</td>
<td>Participation, empowerment, information, attitude, dissatisfaction, community reaction</td>
</tr>
<tr>
<td>Building/architecture</td>
<td></td>
<td>Construction, design, landscaping</td>
</tr>
<tr>
<td>Political and Policy</td>
<td>Planning and development policy</td>
<td>Planning, management, strategy, enforcement, information distribution, forecasting</td>
</tr>
<tr>
<td></td>
<td>Political history and support</td>
<td>Political system, sovereignty, attitude and interest of political leaders</td>
</tr>
<tr>
<td></td>
<td>Tourism priority</td>
<td>Government structure, tourism law and act and its empowerment</td>
</tr>
<tr>
<td>Mega Trends</td>
<td>Transportation</td>
<td>System and category, efficiency, ownership</td>
</tr>
<tr>
<td>Technological</td>
<td>Communications</td>
<td>IT, Mobile, Internet, telephone, media coverage</td>
</tr>
<tr>
<td></td>
<td>Data accountability</td>
<td>Data accuracy and consistency</td>
</tr>
<tr>
<td>Tourist</td>
<td>Tourist satisfaction</td>
<td>Expectations, complaints, problems, perceptions</td>
</tr>
<tr>
<td></td>
<td>Visitor numbers and seasonality</td>
<td>Visitor numbers, occupancy, on-off season, infrastructure</td>
</tr>
<tr>
<td></td>
<td>Niche market</td>
<td>Sports events, MICE</td>
</tr>
<tr>
<td></td>
<td>Products and marketing</td>
<td>Product diversity, branding, positioning, strategic marketing</td>
</tr>
</tbody>
</table>

Indicators can support information-based decision making at all levels of tourism planning and management: national and regional level, specific destinations, key tourist use sites, and tourism companies. With respect to the types of indicators, there are various concerns depending on its purpose: early warning indicators, indicators of stress on the system, measures of the current state of industry, and impact of tourism development, and management. In terms of sustainability and optimization indicators on tourism destinations there might be six different indicators that are social/cultural, economic, environmental, political and policy, technological, and tourist. The categorization (Table 2) is the combination of traditional indicators and several other new developing areas by several researchers include the present author (Choi & Sirakaya 2005; Miller & Twining-Ward 2005). There are several characteristics and
issues on island tourism. Islands have the same indicator category as other destinations but the key performances and variables are little different from other tourism destinations as the result of the islands’ insularity and their economic, social and political difficulties. For example investment, policy, and transportation performance are different from other destinations in island tourism. With these indicators there are four different factor dimensions that exist in island tourism (Table 3). **External, internal, managerial, and key factors** that move interactively in inner destination’s life cycle (refer to MIPC) in order to reach optimization status and level and have some specific performance with island tourism status indicators (ITSI). Among factor dimensions, the key factor mainly follows on changing processes which are replaced by other factor variables depending on status. The relationship between *factor dimension* and *indicators* is basically an interacting and compensating process for having optimization status and level. *Indicators* have key performances and variables divided into factor dimensions; for example, in ITSI (Table 2) we can find *the tourist indicators* have four different key performances and 14 variables, on the other hand in *factor dimension* (Table 3) there are two tourist key performances with four variables in *external and managerial factor dimension*.

(Table 3 Island Tourism Factor Dimensions and Variables)

<table>
<thead>
<tr>
<th>Factor Dimension</th>
<th>Key performance</th>
<th>Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>External Factor</strong></td>
<td>Transportation</td>
<td>System and category, efficiency</td>
</tr>
<tr>
<td></td>
<td>Effects of tourism on communities</td>
<td>Changes in life style (fashion, style, fad inclination)</td>
</tr>
<tr>
<td></td>
<td>Economic benefits</td>
<td>Neighbors’ economic level, investment circumstances</td>
</tr>
<tr>
<td></td>
<td>Product and marketing</td>
<td>General market position, main market</td>
</tr>
<tr>
<td><strong>Internal Factor</strong></td>
<td>Employment</td>
<td>Employment and income opportunities, training</td>
</tr>
<tr>
<td></td>
<td>Effects of tourism on communities</td>
<td>Social benefits (OECD category), life style (cultural identity &amp; type, ethnic group population, location, size, education level)</td>
</tr>
<tr>
<td></td>
<td>Economic benefits</td>
<td>TSA (GNP, major industry, economy size)</td>
</tr>
<tr>
<td></td>
<td>Political history and support</td>
<td>Political system (political history, governing system)</td>
</tr>
<tr>
<td><strong>Managerial Factor</strong></td>
<td>Planning and development policy</td>
<td>Tourism policy (planning, management, strategy), forecasting</td>
</tr>
<tr>
<td></td>
<td>Niche market, product and marketing</td>
<td>Sports and cultural events, marketing strategy</td>
</tr>
<tr>
<td><strong>Key Factor</strong></td>
<td>Sustainability</td>
<td>Energy and water management</td>
</tr>
<tr>
<td></td>
<td>Vulnerability</td>
<td>Transportation (ownership)</td>
</tr>
<tr>
<td></td>
<td>Resilience</td>
<td>Niche market (cultural &amp; sports event)</td>
</tr>
<tr>
<td></td>
<td>Tourism identity &amp; impact</td>
<td>Tourism policy (planning, management, strategy)</td>
</tr>
<tr>
<td></td>
<td>Technological</td>
<td>Communications (IT standard)</td>
</tr>
</tbody>
</table>

The view from the changing process in tourism destinations is one of the critical points of developing a theoretical prospective on island tourism because change is a management preoccupation that requires intensive appreciation of the process transformation. Islands have their own characteristics in tourism development and management processes which are different from other inland destinations due to limited resources and insularity. The very sensitive and fragile characteristics of islands, from the even minor change and effect from external factors, demands more
detailed analysis for dealing and understanding of its changing process both physically and socially. Due to the above reasons, there is need to develop tourism indicators in conjunction with alternative life cycles from the view of the changing process. The combination of MIPC and ITSI is useful for the understanding of destination progress towards sustainable and optimization status with those factors and indicators. The development and use of indicators is increasingly viewed as a fundamental part of overall destination planning and management, and an integral element in efforts to promote sustainable development and optimized management for the island tourism sector at all scales. The ITSI development process are very useful for reviewing its contemporary planning and policy and, if does not exist, it can help to clarify and trigger policy and planning formation.

The Conceptual Mapping of a Multi-functional Interactive Process Cycle (MIPC)

Due to the major concept of TALC as described above, there are several reasons, that make it necessary for TALC to include its criticism for developing the applied MIPC and ITSI: first of all, ITSI is a process of the certain destination’s viability process in using and developing tourism indicators in major tourism areas with the levels of each stage and status. Secondly, the applied MIPC has the characteristics of understanding and analyzing sustainability and optimization of the destinations. The changing process and complexity of the chaos status of the MIPC are based on destination indicators which follow the ITSI development procedure. Finally, there are common factors among TALC, ITSI and MIPC as the key role of management policy and strategy in the destination development process. Adopting and revising of TALC to MIPC and ITSI, the tourism rejuvenation strategies are a very essential part of the renovation process for creating optimized tourist destination levels. According to Cooper (2005), there are two crucial facts for rejuvenation such as product reorganization and transformation which were originally suggested by Agarwal (2002). In terms of the international level of product reorganization, The EU and WTO cases are excellent, concerning a variety of areas in tourism industry innovation. The WTO launched tools for evaluating and monitoring the quality and sustainability of tourism and local development, using indicators (WTO 2004) for evaluating scenarios and programs. For product transformation, almost all rejuvenation strategies contain an element of environmental enhancement from ‘greening resorts’, to the redevelopment of resort townscapes and recreational business districts. Along with the environmental issue, service product quality enhancement, repositioning, diversification, collaboration, and adaptation are essential components. For example, the Gold Coast and Coolangatta, in Australia (Russell & Faulkner 1998) are destinations repositioning to attract international as well as domestic visitors and moving up-market.

The detailed theoretical applications of the TALC are possibly explained as below:

First of all, for the TALC curve should be different from the product life cycle, because tourism has different characteristics such as immobility, untouchable, humanistic factors, the life cycle should be viewed by other conceptions. Based on the premise that tourism is a living industry taking place within living communities, it is evident that development of the industry results in ongoing change of tourism areas. The industry and all the organizations within it are also changing (Haywood 2005). Even the TALC itself doesn’t have any meaning without an understanding of
changing process of its own in each stage in cause and effect analysis. The tourism cycle involves the notion of as a living entity movement, and tourism operates within the dynamic ecosystems and human society and culture system. Some optimistic progress is being made by applying TALC to the organic concept through the Chaos and Complexity Theory (Russell 2005) and changing process. If the TALC is not applied, it is not any more a conceptual and predictive model in the 21st Century, and could not provide appropriate changing processes on each stage, which were pointed out by several authors like Agarwal (2002), Cooper (2005) and Butler himself (Butler 2005a, 2005b). Not only are the triggers major causes, but the strategy of each stage should be identified and the process of changing stage is needed to be explained. The strategic process is one of the main issues of developing TALC.

Secondly, the tourism life cycle curve should not be linear and there are many complicated factors. For example, destinations are usually replaced from high level socioeconomic countries to low level countries especially in the Asia Pacific and plantation economy areas. For example, Hawaii and Guam are typical cases of tourist transition following from the USA, Japan, Korea, and China. These linkages are for the most part due to physical proximity and strong historical or political ties and are also related with timing, period, and location. There is more need to scrutinize the relation with sustainability and vulnerability in its application. The market development from explorers to mass tourism is a general phenomenon, however, plenty of other cases exist. Therefore there are demands on developing the alternative model using the more multi-level approaches such as matrix analysis, indicators, marketing strategy and market forecasting which provide the levels, status, and steps of destinations. In terms of the ontological consideration by Johnston (2005), the institutional concept was adapted to tourism as a life cycle process, but there are some different cases in well-planned development destinations like Dubai where tourist attractions were not existent before. In tourism research, it is one of responsibility to accomplish its own theory and application model in destination management by revising TALC.

Thirdly, operational ambiguity and the difficulties of adopting marketing strategies should be overcome for an efficient management model. The shortage of the original PLC in an operational approach shows that the four phases or states are not clearly defined, have some difficulty in identifying precisely where a product is on the curve at any given moment in time, and uncertainty as a planning tool (Coles 2005; Dhalla & Yuspeh 1976). TALC has an inherent weakness from the PLC’s shortage, the lack of the operational consideration on different units of analysis, relevant markets, patterns and stages, the area’s shape, unit of measurement, and relevant time unit. The TALC is very weak at captivating the distinctiveness and triggers of the step from one stage to another one, also the external factors in shaping the success and the sustainability of the tourist destination like competitive tourist areas, the concerned publics, and political bodies should be considered. Similarly, little is known about economic development both as an interactive process of creating and realizing through resource combination and exchanges, and as an interactive process between tourism organizations and relevant institutions that may, or may not, be part of particular tourism area (Haywood 2005). The lack of acceptance and pragmatic usefulness within the industry implies that TALC may need to be reconceptualized. Applying the aspect of teleological approaches, strategists, planners, and managers should constantly battle with process of transformation and the constant pursuit of
solutions to resolve problems and capitalize on opportunities and reaching the optimization level is needed.

Finally, with respect to the relationship between visitor numbers and stages of the TALC, regardless of the stages one can overcome the low visitor numbers in some destinations, cooperating with each other in marketing, financing, etc. the decreasing numbers are not just a natural inclination. The variable Y axis was replaced by several other factors like the visitor number’s normal distribution with a zero mean (Haywood 1986), a person-day as a length of stay (Strapp 1988), the number of accommodation units (Johnston, CS 2005). They found that the possible alternative cycle did not follow each stage of TALC, and changed into a different or unpredicted curve and cycle depending on other variables.

From the legend of the TALC to the contemporary application of the life cycle, academia suffered the shortage of the theoretical and empirical support on the tourism destination life cycle and its development process. The more explanatory cycle, called “Multi-functional Interactive Process Cycle” (Figure 5) with a combination of those above theoretical and historical analyses in island tourism is more appropriate. The curve which consists of four different statuses and different levels can explain the above three theoretical problems through the concept of ‘cycling and circling’ compare to the linear and simple concept of the TALC. The principle of the concept is a combination and interacting process of the two things, ‘the factors’ related with ‘level’ which have the characteristics of intervening, changing, continuing, and ‘the symptom and result’ that belong to ‘status’. Statuses which have four interactive stages are basically cycling among them positively and negatively, or interactively, even extremely (i.e. from self-governing to recognition), It’s movement and interacting processes depend on the other four major factors which decide each status. Circling happens on two dimensions that are located in the inner cycle area and along the factor’s marginal circulation limit area through the status and levels. Outside of the marginal area doesn’t have any meaning of existence in terms of tourism respect. The factors have their benchmark and marginal figures that should be developed in the empirical data analysis and case studies and interpreted as indicators.

There are several theoretical bases associated with the Multi-functional Interactive Process Cycle that have particular relevance to the understanding of each status and level in the changing of the destination system. The lock-in effect (Waldrop 1992) implies the positive feedback driven and self organizing tendencies which create a constant state of influx and inertia with the system. This effect could stimulate the recognition status for having the positive dominance and affect the system until the self-governing status. The location and reputation advantages could be developed as market positioning factors encouraging investment. With respect to the butterfly effect (Lorenz 1993) it is mainly related to the unexpected incidents and clues which affect the status’ sudden change on the preparation and self-governing status. For example, the Bali terror and tsunami issues encouraged tourism markets in domestic destinations, revisiting the mature attractions. Edge of the status, especially on the self-governing status, where a system is in a state of tenuous equilibrium, on the verge of collapsing into a rapidly changing state, with new dynamics for the future evolution, there is the edge of chaos and phase shift (Waldrop 1992). A phase shift is induced by factors that are moving continuously between each status and levels.
The definitions of each status are:

*Recognition* is the starting point of tourist destinations that possibly divide into natural and historical formations and investment and policy driven artificial type. On this status, the ITSI (the four factors), as indicated before, generally have low levels and very uneven combination among them.

*Preparation* is characterized by intensive planning and investment from the public and realization of their economic value through the tourism related business. The factors move very quickly and start interacting and have positive combination. Lots of marketing activities about development investment, which are different from the destination promotion, happen at this status and sometimes the destination gains the advantage of positioning in the market by political purpose.

*Socialization* like human beings, at this status, the destination starts moving
organically for achieving market reputation and absorbs the external effects positively toward sustainable growing patterns. This status is a very critical era for the future destiny, if the system fails to adjust and develop, it will be returned to the re-cycling system (3.2, 3.1) or repelled from the cycle. The ITSI have approached to standard level of the favorite destination in both domestic and international markets. At this status the cycle could be changed dramatically, its duration along with the style, fashion and fad of its contemporary society.

**Self-governing,** the era of diverse, chaos, complexity, has its own instinct of survival and inclination of changing into positive position as an optimized destination through cycling and circling of the status and factors. This process occurs inside and outside of the destination and induces and stimulates other interest groups. On this status, the destination experiences from the mature, decline, rejuvenation, to re-cycling stage. The changing process largely depends on the management policy and strategies along with the factors. On the other hand, the extreme changing cycle would be appeared (2.4.1, 3.4.1), however it would not be happening the direct movement from the recognition (1) to self-governing (4) status because it is impossible for the factors to change directly into the optimization level skipping the mid-process.

**Development of ITSI and its application to MIPC**

Indicators have increasingly become an important component of the planning and management processes for specific destinations especially island tourism destinations. Such as the Tourism Optimization Management Model (TOMM, 1997), the Island Tourism Multi-Dimension Model (ITMM, Chen & Billing 2004), have been developed within the context of the goals and objectives set for the optimization and sustainability of island destinations. Several other approaches developing general indicators in economic impacts and forecasting such as Tourism Satellite Account (TSA, Smith, SLJ & Wilton 1997) and Artificial Neural Network (ANN, Palmer, Jose Montano & Sese 2005) have been testified and implemented with several other models. The current literature on developing indicators suggests that considerable progress has been made in framework with policy and tourism impact(Choi & Sirakaya 2005; Ko 2005; Miller & Twining-Ward 2005; Twining-Ward & Butler 2002; WTO 2004). However, there is little progress in monitoring and measuring sustainable and optimized tourism destination development. This lack of progress may be due a lack of mutually accepted measurement and implementation models. Thus, it is suggested that the island tourism indicators and factor dimensions for identifying and analyzing sustainability and optimization are used to support the concept of changing and complex processes. The author developed the ITSI on the basis of several other authors’ studies and cases (Choi & Sirakaya 2005; Ko 2005; McElroy 2006; Twining-Ward & Butler 2002; WTO 2004).

**Conclusions**

In every case the growth is confronted with internal and external difficulties, slowed, in jeopardy, or hampered not because of market saturation but a failure of management and policy. The future of the tourism business is reliant on the quality of human organization and the proper application of theoretical models especially in tourism destination development and management. Apparently, small changes that are magnified by positive feedback processes to become the drivers of major phase shifts
in the structure of the system could exist. Furthermore, by regarding tourism destination systems as being generally in a state of tenuous equilibrium, rather than intrinsically stable, we might be a better position to anticipate and manage change.

Even though the criticism mentioned in this review of the TALC, it may have the principle for the application in understanding and developing several aspects of sustainable and optimized island tourism management and development strategy. There are three directions for developing the destination life cycle along with the management policy and strategy of islands: first, changing the original concept of TALC, as an evolutionary and organic process concept of reaching other status and levels through application of the chaos theory and changing process, must be continued. Secondly, having the applied Multi-functional Interactive Cycle (MFIC) and the concept of Island Tourism Status Indicators (ITSI), one may try to develop a more advanced research patterns on island tourism destinations. Thirdly, the marketing theory of management and strategies are very important with tourism policy. On the basis of those theories, it is possible to develop the island tourism status indicators and apply to the optimization of the island tourism status in conjunction with the planning, strategies, policy and its management.

The journey starting from the original S curve of PLC, the inherent TALC, the curve of the re-orientation stage on rejuvenation, and the chaos theory to the suggested multi-function interactive cycle (MFIC) and its Island Tourism Status Indicators (ITSI) could help understanding of the contemporary tourism research interest and argument on the destination life cycle and its management process.

A destination’s environment and resources that are not only physical but also social factors determine what can be accomplished in island tourism optimization and its transformation has an evolutionary, dialectical, and teleological process. Ritchie and Crouch (2000) warned that ‘competitive is illusory without sustainability’.


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No Island is an ”Island”:
Some Perspectives on Human Ecology and Development in Oceania

Thomas Malm
Human Ecology Division, Lund University

ABSTRACT: It has often been argued that the Earth is like an island in space and that its brittleness is most clearly reflected on small islands in the oceans. Easter Island, in particular, with its largely depleted resources, has been seen as a microcosmic warning about what could happen to our entire planet. However, the analogy of the Earth and islands with finite natural resources is not self-evident from perspectives on human migration, trade, or carrying capacity. Using the islands of Oceania as examples, it is argued in this paper that unlike our “Earth Island” in space, these islands are not any isolated, finite “planets”, but that the worst tragedy for their human populations has occurred because they no longer have remained isolated from a larger economic system. This paper also shows that the economies of the Pacific microstates increasingly are becoming dependent on global transnational networks of kin and economic transactions that have very little to do with local natural resources, but rather with something which actually might be their most important economic resource of all: independence.

Introduction

During a conference in 1992 – arranged by UNESCO and its international council for island development, INSULA – a number of specialists within different disciplines suggested as the first of its conclusions that the Earth is like an island in space and that its brittleness is most clearly reflected on small islands in the oceans (Bouamrane 1993). In the same year Bahn and Flenley published their book Easter Island, Earth Island, where they argued that Easter Island with its largely depleted natural resources could be seen as a microcosmic warning about what may happen to our entire planet. Since then, this perspective has been frequently recurring in popular as well as scientific discourses on environmental issues (e.g. Redman 1999, McDaniel & Gowdy 2000, Diamond 2005).

The purpose of this paper is to question to what extent the analogy of the Earth and islands with finite natural resources is valid, considering such aspects as human migration, trade, and carrying capacity. On one hand, the striking aspect of human life on the islands of Oceania – which will be used as examples in the following – is not that they were isolated. Most of them had no or few contacts with people in Asia or America, but there were complex sociocultural inter-island networks and practically every inhabitable island had been settled by sea-voyaging people hundreds or even thousands of years before the era of European exploration and the emergence of the modern world system (see e.g. Kirch 2000). Today, of course, it would be even less apt to characterize these islands as isolated, finite “planets”, because they...
have become parts of a global system of migration and resource flow. The basic perspective suggested here is instead that the worst tragedy, as far as the human island populations are concerned, is not isolation but increasing integration into a much larger economic system.

**Islands and the concept of carrying capacity**

In 1911, 25 reindeer were put ashore on a small island off Alaska. For the next 26 years the population grew nearly exponentially, until there were over 2 000 reindeer on the island. They badly over-grazed their food supply, primarily lichens, and the population crashed so that only eight animals were left in 1950 (Pianka 1978:114).

What this example illustrates could be summarized with the concepts of “carrying capacity” and “overshooting”. In short, carrying capacity can be defined as the upper limit on the long-term population size that an environment can support. This concept is connected to the fundamental ecological principle that no population can grow exponentially without sooner or later reaching a point where it is “overshooting” the resource base, that is, encountering difficult environmental conditions or shortages in its means for reproduction. As a consequence, unless the average actual rate of increase is zero, it either decreases until becoming extinct or increases so as to lead to the extinction of other populations.

Because they are so clearly geographically finite, the islands of the world’s oceans provide excellent conditions for the study of such processes. Particularly following the publication in 1967 of *The Theory of Island Biogeography* by MacArthur and Wilson, islands have received considerable attention by ecologists and other scientists who seek natural models for population growth and regulation.

Thus, if a canoe load of, say, 25 persons arrived to the Hawaiian archipelago in A.D. 400 and their descendants proliferated at an annual rate of 2% – which is below that of several Pacific islands in recent times – the size of the population by the time of Captain Cook’s arrival in 1778 would not have been a few hundred thousand (as it actually was), but $2.32 \times 10^{13}$ people (Kirch 1984:102), or more than 4 000 times the present size of the entire world population!

One name which immediately comes to mind here is Thomas Malthus, who concluded in the late 18th century that whereas human population has a tendency to grow geometrically – or, as we would now say, exponentially – agricultural production of food grows only arithmetically. This means that population growth tends to outstrip the productive capabilities of land resources. The Malthusian perspective suggests that because of limitations in food production, “positive” checks such as famine and increased mortality, or preventive ones such
as postponement of marriage and limitation of family size, work to reduce population growth back to zero or minus (see Malthus 1960). While such limiting factors certainly are of importance, a major problem with Malthus’ discourse is that he assumed food productivity to be fixed. In the case of the reindeer being confined to their island, such was indeed the case, because when there were no more lichens to eat they could not do anything about it and had to starve, but for human beings, as we know, the situation is quite different. We have at least the potential ability to try to plant, grow new types of crops, intensify agriculture, preserve food, import food, practice birth control, move away, and so forth. This is the reason why cases such as the reindeer on their island and the prehistory of Hawaii are not directly comparable.

Still, such comparisons are actually often made. Within modern theoretical ecology, any habitat can be analytically regarded as an “island” if it is, somehow, isolated (see e.g. Gorman 1979). Depending on the species, this could apply, for instance, to a desert oasis, a mountain peak, a valley, a pond or a deep cave – even an animal can be an island to the parasites inhabiting it. Some years ago, two Swedish scholars (Sörlin & Öckerman 1998:13), stated in a book, the title of which translates as “Earth an Island”, that the sea, for people just as for plants and animals, functions as a barrier against the rest of the world. This is true, however, only if the people who wish to reach or leave the island do not have any boats or rafts – and this has certainly been an exception rather than a rule throughout the prehistory and history of coastal or island peoples. (Today, of course, there are often airplanes that make them even less isolated.)

To return to the “Easter Island, Earth Island” model, one might get the impression that the consensus of opinion is that by the time of European contact, the resources of Easter Island, including the forests (Flenley 2001), had been depleted by the once prosperous inhabitants to the extent that they no longer could build large canoes and migrate to other islands. Without trees, neither would they have been able to transport those huge stone statues which have made the island famous. However, aside from the fact that we do not have any data regarding the extent to which logs were needed for the transportation of statues (see Heyerdahl et al. 1989), it is by no means certain that the trees disappeared mainly as a result of logging. It is quite possible that an extended drought transformed the landscape of the island into a barren wasteland (McCall 1994, Hunter-Andersson 1998).

Nunn (1993, 2003) argues that a rapid cooling of temperatures in the Pacific Basin around A.D. 1300 and a climate change that perhaps lasted for a century might have had severe impacts on the environment of Easter Island and could have contributed to societal breakdown. For example, the fall in sea-level, perhaps as much as 1.1 metres, may have
damaged the near-shore marine ecosystems, and the fall in water tables would have caused many crops to yield less well. Inevitably, he writes (2003:224), “the carrying capacity of many islands was abruptly exceeded, societies fragmented, and there was conflict between various human groups competing for the diminished pool of available resources.” Thus, there is no conclusive evidence to suggest that the depletion of resources simply was a result of population growth and a lack of ecological insights, such as implied by Ponting (1991:7) when he states that the people, “aware that they were almost completely isolated from the rest of the world, must surely have realised that their very existence depended on the limited resources of a small island. After all it was small enough for them to walk round the entire island in a day or so and see for themselves what was happening to the forests. Yet they were unable to devise a system that allowed them to find the right balance with their environment.”

Ponting’s conclusions about what the people “must” have realised are not self-evident at all. Today, no logging company that is cutting down a rainforest could possibly defend its actions by referring to the gods or spirits as being able to bring back the trees, but when we talk about a pre-modern society like Easter Island we cannot assume that ecological ignorance was implied by what Bahn (2001:65) describes as a “boundless confidence in their religion to take care of the future”. As argued by Nunn (2003:226), “there is abundant evidence that environmental changes of extraneous causation forced island peoples to alter a whole range of lifestyle options” (emphasis added).

Catton (1980:215) states that by the time that Easter Island was first reached by Europeans in 1722, the population “had declined to an estimated 3,000 or 4,000, from a maximum that was probably at least twice that […] Mortality continued to exceed births, and the entire population of the island was down to 155 persons by 1866.” However, whatever major crisis there may have been previously appears to have been over by 1722, and it was not as a result of this crisis that the people were drawn close to extinction, but because of the Peruvian slave trade in the 1860s and introduction of epidemic diseases (including those transmitted by repatriated slaves) as well as emigration to the islands of Tahiti and Mangareva (Maude 1981, Raybaud 1993). As a matter of fact, for the 140 years between 1722 and 1862 there is no clear evidence of any major decline in population. There might even have been a slight increase, because Maude (1981:192,194) estimates the number to have been 4 126 in 1862. The following year, after 1 407 slaves had been taken, the number ought to have been over 2 700, but actually dropped to around 1 740 (Ibid.). Métraux (1940:43) writes that the reason for this was that repatriated slaves, who were brought to the island, “carried with them the infection of smallpox which in a short time decimated the rest of the population. The
casualties caused by the epidemic are said to have been in the thousands.” At the least, they would have been around 1,000.

Despite Ponting’s (op. cit.) statement that the people had not been able to find a balance with their environment, it is quite possible that the population of around 4,000 was the average population size, given the environmental limitations after A.D. 1300, which, after all, allowed the cultivation of bananas and root crops as well as the breeding of chickens. When Cook visited the island in 1774, he described its produce as sparse but “all excellent in its kind”, and stated that the sweet potato was the best he had ever eaten (Beaglehole 1961:349). In any case, despite the popularity of the analogy with an isolated planet in space, no one could possibly know what would have happened if the people had been left alone on Easter Island. It is not unthinkable that their chiefs could have negotiated peace among the competing factions or that a more sustainable agriculture and fishing could have evolved. Be that as it may, the point here is that although a number of plant and animal species had become scarce or extinct, perhaps due to human action and most likely with climatic changes as aggravating factors, the big tragedy from the 1860s and throughout the 19th century occurred because the island was no longer like an isolated “planet”.

The same could be said about Nauru. In their book Paradise for Sale, McDaniel and Gowdy (2000) use this island as an example of what might happen to our planet, concluding that “Nauru is a window through which one can see global trajectories into disaster […] The story of Nauru is the story of all of us”. Is it? The reason why Nauru has become barren is that its phosphate (guano) has been exploited, to be used as fertilizers overseas, a fact that is certainly not due to a local process in isolation but to conditions far beyond it, that is, a demand on the world market. The “paradise” could only be “for sale” because there were buyers somewhere else. Obviously, from such a perspective, the analogy between Easter Island or Nauru and the “Earth Island” would only be apt if extra-terrestrial beings were introduced into the picture.

**Alternative perspectives on population and carrying capacity**

Nunn (1993) has presented an alternative view of the relationship between carrying capacity and population growth, according to which carrying capacity can be quite variable and highly mutable in response to climatic changes. Naturally, the number of organisms – including human beings – that can be supported in a given area depends in part on factors such as temperature and precipitation.
If we consider people, their lifestyle, exploitation of natural resources, and other factors seen in relation to fluctuations in world market prices for their products and other changes in their economic relationship to other societies, we realize that the “crisis point” is not at all self-evident. Similarly, it is, because of a changed lifestyle and imports of fattening food from overseas that obesity and cardio-vascular diseases have recently become a tremendous problem among people on some of the most densely populated islands in the world. On quite a few islands, in fact, we find that as the population has grown, people have not begun to starve, but have acquired more and more fattening food to eat, because their relatives move overseas and send money and goods (including food) back home (Thaman 1988, Crocombe 2001:77–79).

If major ambiguities in our analyses are to be resolved, we must specify if it is local, regional or global “densities” that we are analysing, and how a population’s resource territory is delineated, and one must avoid regarding the human population as being fixed in space.

Let us consider the words of Tongan anthropologist Epeli Hau’ofa (1994:156–157), who writes that what he calls a “sea of islands”, Oceania, “is neither tiny nor deficient in resources.” It was that way, he argues, “only as a condition of the colonial confinement that lasted less than a century in a history of millennia.” What has happened since the 1960s, in particular, is that many people from the islands “have broken out of their confinement” and are now “moving around and away from their homelands […] They are once again enlarging their world, establishing new resource bases and expanded networks for circulation” (Ibid.). Therefore, this island world “certainly encompasses the great cities of Australia, New Zealand, the United States, and other countries too. It is within this expanded world that the extent of the people’s resources must be measured” (Ibid.). Thus, in addition to local population, resources, area, and climatic changes, i.e., factors that we would focus on in studies of animals and plants, there is here another factor that has to be taken into account. This is the global network and its flows of migrants, aid, trade, and money transfers. Any “crisis point” here is a quite different matter from what could be summed up in simple models like those that we find in textbooks on ecology, and that often have been applied to human societies. It is evident that we need to look at the often problematic relationship between human populations and natural resources without any preconceived notion of a once and for all fixed local carrying capacity.

What, for instance, does “globalisation” imply for contemporary Oceania? It is quite clear that for the daily life of its people, “globalisation” has had two very different consequences. First of all, people in Oceania are of course in various ways affected culturally and
economically by the global flows of ideas, money, and commodities. Secondly, and perhaps more surprisingly, the island communities are not limited to the people who live on the islands, but are increasingly becoming characterized by what Bertram & Watters (1985) have called “transnational corporations of kin”. They include a diaspora of relatives who have moved to or even been born in places overseas but who are still to a large extent emotionally and economically tied to island society. The latter has been particularly well documented for Polynesians, who are generally very collectivistic and usually regard themselves and all relatives as part of their extended families, no matter where they happen to live (Ritchie & Ritchie 1979:25). By the beginning of the new millennium, there were about 750 000 Polynesian immigrants and their descendants in USA, New Zealand and Australia, plus another 5 000 and 1 000 in Europe and Asia respectively, whereas there were only 536 000 in Polynesia, excluding Hawaii and New Zealand (Crocombe 2001:69). We do not know how the diasporic people will feel about their ties to the home islands after a few generations abroad (cf. Brown 1998), but for the contemporary situation, at least, it could be argued that more than half of the members of Polynesian society live outside the Polynesian territories.

It is true that space for people to live, grow their food, and build their houses was very limited on many of the islands of Oceania. It was hardly the size of the islands that made them attractive to the colonial powers. With very few exceptions, neither was it their natural resources. In fact, after some 350 years of European exploration, until the latter half of the 19th century there was almost no interest at all among the world’s most powerful nations for establishing colonies among the smaller islands of Oceania. It simply seemed bad business to send government representatives to islands that had so little of economic interest to offer. What they could offer visiting ships in the way of provisions, copra, sandalwood, and nacre could be obtained by trading and without establishing any colonial rule. Therefore, they were long merely interesting as idyllic stop-overs for ships along the routes between the continents where much more profitable colonies could be established.

To take just one example (Toullelan & Gilles 1992), several years before Tahiti and its neighboring islands, became a French protectorate in 1842, their queen and British missionaries had asked the government of Britain to annex these islands, but without encountering the slightest interest. When they finally did become annexed it had nothing to do with natural resources, but was a result of French and British missionary rivalry. These islands had actually been a French protectorate for almost 50 years before they became a colony. Until the 1960s and the beginning of the nuclear testing programme, it remained a more or less non-colonized colony with at most around 2 000 Frenchmen. To this very day,
the French “overseas territory” now known as French Polynesia has in fact cost France much more than it has yielded in terms of income. Thus, despite the world’s largest exports of black pearls, total export revenues from French Polynesia only covered about 15 per cent of the costs of imports by the late 1990s (ITSTAT 1998:334,339), whereas the remainder was financed mainly by French aid. For Oceania, this is by no means an unusual trade “balance”. In 1998, for instance, the Kingdom of Tonga imported nine times as much as it exported, in terms of monetary values, and until a local brewery was established there, the value of its dominating export, bananas, was almost equal to the annual costs of importing beer (Malm 1999:344).

With very few exceptions, it could be argued that the small island nations have very little hope of surviving economically only on their natural resources. How little they can export is quite evident from the fact that one of their most important sources of national income is stamps, many of which are sold only to philatelists and never actually used for mail. Starvation may not be a problem, but rather the fact that many of the Oceanian peoples have acquired what Walsh and Trlin (1973:50) call “a champagne taste on something less than a beer income.”

**Geo-strategic location and independence as economic assets**

If they have so little natural resources, and if it is generally a matter of moving much more capital and commodities to the islands than away from them, why then do the United States still keep Guam and American Samoa as “unincorporated territories”, why is Easter Island the “Fifth Region of Chile” with Valparaiso as capital, and why does France still insist that French Polynesia is one of its “overseas territories”?

The islands of the Pacific are most of all of interest because of their geo-strategic location between Asia, Australia, and the Americas. It is important to the great powers just to be represented there, directly or (like the United Kingdom) indirectly. One might wonder how this is possible in the “post-colonial era”. The simple answer is: money. As pointed out by Poirine (1995:45–80), aid is actually often just another word for rent. Money and goods are sent to the people on the islands in the hope that they will live like happy consumers without causing trouble for the governments that wish to be represented there. This could explain why American Samoa, with its strategic location in the central part of the South Pacific, receives five times more aid than the independent and much poorer western part of Samoa. In the French territories, the aid per capita is 366 times higher than the average in developing countries (Ibid.). Consequently, during the whole post-World War II period, arguments for
independence in French Polynesia have repeatedly been met with rhetorical questions about how life there would become if France would abandon the islands and leave it to the people living there to finance everything that they have become accustomed to (see Danielsson & Danielsson 1986). There has been a strong incentive for France to retain its islands as a nuclear testing ground. Thus, for three decades (1966–1996), French Polynesia was characterized by the economy of the atomic bomb.

The benefits of “geo-strategic location” and “environmental load displacement” are a function of remoteness and isolation. It is difficult to imagine any other reason than the remote and “isolated” location of the Marshall Islands for the United States to pay them (in 1989) at least US$ 56 million for being allowed to deposit 23 million tons of waste there (Crocombe 2001:32), for the United States and the United Kingdom to have conducted 122 nuclear tests in Micronesia, or for France to have carried out 193 tests on the Tuamotu Islands to the east of Tahiti (Ibid.:590). There is nothing else about these islands that would make them particularly well suited for nuclear tests than their distance from the main population centres of France. These are the kinds of circumstances that generate problems of “environmental justice”. If these tests were to pollute the environment and cause cancer among Polynesians, which many critics claim that they indeed have done (e.g., Johnson 1984, Danielsson & Danielsson 1986, de Vries & Seur 1997), this would pose no major political threat in France, as it would not affect the majority of voters there.

For many years it was believed that the French nuclear tests would cease only if French Polynesia became independent. However, international negotiations and Glasnost did result in the tests coming to an end in 1996, but these islands are still a part of France and their inhabitants even have EU passports. Is independence a politically realistic option?

One answer could be framed in terms of what has happened to other former colonies that already have become politically independent. In the 1980s, Bertram and Watters (1985, 1986) coined the term MIRAB – an acronym for migration, remittances, aid, and bureaucracy. These factors are still often seen as determining the development of the Pacific microstates (cf. Poirine 1998). These nations remain dependent, for their welfare, on people moving overseas to earn money. Money as well as goods sent home mean a lot for the island economies, and aid is necessary for building hospitals and buying medical equipment. In addition, government officials can receive salaries, in a situation where there is so very little in the way of other jobs, especially for all those who have left the rural communities and outer islands to move to town or the main island. Today, we know that the picture is much more complex, not only because of factors such as tourism and the boom in pearl cultivation, but above all,
perhaps, because the island nations are becoming increasingly efficient at earning money from their independence.

Independence is often presented as a democratic right, but very few seem to have realized that independence in itself is an economic asset that can generate much more income than any other resource in the islands (Crocombe 2000:362–378). It is only because of small countries like Tuvalu that Japan could go on killing whales, because when the countries around the Pacific voted about this, 9,000 Tuvaluans had as much of a say as 1.2 billion Chinese. Similarly, because of its independence, Tonga has earned large amounts of money from selling passports to rich people in Hong Kong who feared that they would not be able to travel when communist China took over (Bain 1993:160–167). There have even been attempts to grant an Australian bio-technical company the exclusive right to the Tongan gene-pool, in order to provide it with DNA and blood samples with the purpose of improving research on cancer and cardio-vascular diseases (Hornborg 2002).

Many of these countries are now established as so called “offshore finance centres”, “international trust centres”, or “asset protection centres” (Crocombe 2001:363–367). For example, in Vanuatu, although only 0.2 per cent of the population were involved in business of this kind, such financial activities have been estimated to account for 12 per cent of the GNP (Barrett 2000). In such “centres” one can launder money, stow away capital, or register ships to avoid certain regulations. Attractive domain names on the internet can be leased from these independent nations, who all have their own internet abbreviation (such as nu for Niue). The “Small Islands States Group” of Cook Islands, Kiribati, Nauru, Niue and Tuvalu has demanded that international airlines should pay fees every time they fly over the sea territories that make up the exclusive economic zone of these island nations in the central parts of the Pacific. In the same vein, who would have imagined that Tonga would become number six among the world’s satellite nations? As an independent nation, close to the equator, Tonga could claim the right to some orbital slots in space, so as to lease them out to big TV stations with the ambition to reach viewers all over the world. Finally, to handle all these new ventures in globalization, the island nations have expanded their state bureaucracies. Thus, the largest buildings in the capital of one of the poorest countries, Samoa, are no longer churches (as used to be the case in most Pacific capitals) but a six-storey government building and a seven-floor national bank, both built with aid money. In contrast, the hospitals in the islands are generally in poor condition.

Aid money as well as remittances are mainly used for consumption. As a result of newly acquired tastes, there is a diminishing interest in what local resources there actually are. The
story behind this is a long and complex one, which cannot be told here, but the material results are fairly easily observable by any visitor to the islands. Today, there are even island nations that import coconuts. Not only is imported coconut cream sold in many stores, but in Tonga I was told in 1988 that coconuts were imported in order to keep the coconut oil mill running. The Tongan islands are practically covered with palm trees, but the prices paid for coconuts and copra were so low compared to the money sent from relatives overseas that almost no one bothered picking up the coconuts anymore, except for domestic use or the small quantities for sale at the fruit and vegetable market. The new patterns of resource use often have detrimental environmental consequences. For instance, Tonga has earned a lot of money exporting squash pumpkins to Japan, but this has involved the use of great quantities of pesticides, leaking down into the aquifer and contaminating precious sources of freshwater. The Tongans have largely used the money to buy imported food, cars, and other commodities, which have brought further environmental problems such as how to dispose of increasing volumes of solid waste. Hills of garbage are now to be found on many islands once known for their pristine remoteness.

Conclusion
I have argued that the analogy between the “Earth island” and oceanic islands is not at all as apt as is often suggested. There is no conclusive evidence to suggest that the population of Easter Island would have become extinct if it had remained isolated. More or less all the negative trends in health and environment in Oceania are consequences of the islands no longer remaining isolated from a much larger economic system. The population of Easter Island became almost extinct because of slave trade and introduced diseases. That overeating has become a much greater problem in Polynesia than starvation, that numerous nuclear tests have been made there, that remittances sent home by relatives are used in ways that generate increasing health problems as well as problems of garbage disposal, and that more aid money is spent on impressive government buildings than on much needed hospitals – all of these trends exemplify how incorporation in the world system continues to pose greater threats than isolation.

It have argued, also, that the Oceanian diasporas living overseas illustrate that a “society” is not synonymous with people living in a certain place (cf. Sahlins 1994). In ecological terms this means that the boundaries of population and habitat do not coincide. Any analysis of the human ecology and development of contemporary Oceania must be made in light of the historical background and the relationship between the islands and the modern world-system.
This is a quite different framework of analysis than that suggested by the “Earth island” analogy. Thus, it is of fundamental importance to realize that, in our globalized world, *no island is an island.*

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I) Sources of electricity generation in Pacific Island Countries

All Pacific Islands benefit from abundant resources in renewable energy, whether it is hydroelectricity, geothermal, solar or wind energy. Despite an increase in the use of such resources for electricity generation in the last three decades, virtually all Pacific Island Countries generate most of their electricity using diesel generators.

This section provides a brief overview of the energy sources used for electricity production in Pacific Islands. For more detailed information, a table displaying the sources of electricity generation in each country can be found in the appendix (Table 1).

Diesel combustion plants can be found on each main island in the Pacific. They provide the bulk of electricity generation in all islands, and the totality of electricity in Nauru. This pattern is depicted in the following graph. Note that these figures only refer to electricity generated by the main electricity provider of each country, which means that the use of renewable energy sources such as solar home systems (mostly in outer islands) is understated, although diesel generators can also be found in remote areas and villages which are not connected to the main electricity grids. Most electricity in New Caledonia is generated by both gas turbines and internal combustion engines, however we could not determine how much electricity was generated from each type of plant, and hence the diesel generation for New Caledonia displayed below is overstated.
In Fiji, French Polynesia, New Caledonia, Papua New Guinea, Samoa, Solomon Islands, and Vanuatu, hydropower is also used and represents the second biggest source of electricity. However, the share of hydropower has been decreasing in the past years, notably in Fiji and New Caledonia: in Fiji, the share of hydropower decreased from 92% in 1995 to 80% in 2000 and to 55% in 2003 (due to a drought), although new hydropower plants have been constructed since 2003 (PIREP report volume 4, p. 23). In New Caledonia, the contribution of hydropower to total generation has slightly increased, from about 16% in 1995 to more than 19% in 2004, to the detriment of diesel generation, but the installation of both a gas turbine in 2003\(^1\) and a coal combustion plant in 2006 to respond to growing industrial needs may have reversed this trend. Note that there is also hydropower potential in Micronesia, and a hydropower plant in the state of Pohnpei, although this plant was not operating in 2004.

Wind turbines have been installed in the Cook Islands, Fiji, New Caledonia, French Polynesia and Papua New Guinea. Nevertheless, such installations typically do not contribute much to the total electricity generation as there is little installed capacity. In New Caledonia in 2003, the installed capacity of wind turbines exceeded 6 MW but wind energy represented less than 1% of total electricity production.

Solar energy is widely used in Pacific Islands (except Nauru), particularly in outer islands and remote villages which do not have access to a main electricity grid. Solar photovoltaic and solar water heating systems have often been installed in the context of lending and donor programmes for rural electrification. Although such programmes were not always successful, the experience they provided led to substantial improvements in solar energy use and organisations are now more informed on the institutional approaches that are suitable to introduce and maintain solar systems in Pacific Islands (such as the type of owner, installation, maintenance, fee collection).

There are also hybrid power plants combining solar and wind energy with diesel generation in Fiji and French Polynesia (solar/diesel hybrid). However, the Fiji plant has been using less and less renewable energy: while the wind and solar components contributed over 60% of the hybrid generation in 1997, their contribution fell steadily to less than 15% in 2002, due to a lack of technical support and component failures\(^2\).

Biomass gasification has been used in a few islands, notably in Papua New Guinea for commercial copra, cocoa, coffee and tea drying. In late 2002, 52 gasifiers were still used by coffee processors in Papua New Guinea. A few plants are also operating in Fiji, Cook Islands, and the Federated States of Micronesia, however these plants have not typically been used for energy production. In Micronesia, for example, the gas is bled off because people find the concept of using biogas from manure for cooking offensive. Other power gasifiers were installed in Vanuatu (between 1982 and 1994) and Samoa (in the early 80s), but these systems are no longer operating.

In summary, although most Pacific Island Countries have some experience with diverse renewable energy technologies, the contribution of renewable energy sources remains relatively low. Apart from hydropower which can yield up to half of the electricity in some islands, diesel generators remain the biggest source of power generation.

\(^1\) ISSE (2003), *Bilan Energie Nouvelle Caledonie*.
II) Electricity Supply in the main islands

In most countries, main grid electricity is provided by a government-owned utility, which is often the sole electricity provider. Most of these utilities used to be government departments and have become corporate state-owned enterprises. Only in Tonga, Vanuatu, Wallis and Futuna, French Polynesia and New Caledonia are the electricity utilities privately owned (although Shoreline, the company which supplies electricity in Tonga, is currently negotiating to sell its utility back to the government). Note that electricity suppliers in French territories, which are UNELCO (Vanuatu), EEC (New Caledonia, Wallis and Futuna) and EDT (French Polynesia), are all subsidiaries of ELYO, from the international group SUEZ3.

In some countries, there may be different power supply arrangements for different groups of islands. For example, in the Federated States of Micronesia there is a different public electric power system in the principal island of each of the four states; so that each state manages its own supply. In some countries there is more than one supplier in a given island. In New Caledonia, for instance, both EEC and ENERCAL are involved in the production and distribution of electricity. In Kiribati, there is a public utility responsible for power, and the Solar Energy Company (SEC), an incorporated company owned by the government, is involved in the sale or lease of solar electric systems and relevant components. The country with the highest number of electricity providers is Papua New Guinea: while PNG Power (PNGP) is responsible for the generation, transmission and distribution of electricity throughout the country, operating three main interconnected systems and nineteen smaller provincial systems, there are a large number of private electricity producers whose total installed capacity is comparable to that of PNGP4.

In most islands, the main electricity utility only serves the main island or largest islands. Only SIEA (in the Solomon Islands), TEC (in Tuvalu) and EDT (French Polynesia) serve all or a large number of populated islands. Some utilities have recently expanded to provide service to smaller islands, such as Shoreline in Tonga and UNELCO in Vanuatu5. The percentage of households electrified is thus lower in outer islands and rural areas, and ranges from under 20% (Papua New Guinea, Solomon Islands, and Vanuatu) to close to 100% (Cook Islands, Nauru, Niue, Samoa, Tonga, Tokelau, Tuvalu)6.

Electricity utilities of Pacific Islands vary dramatically in size, from 2.4 MW of installed capacity in Niue (with less than 2000 customers) to about 614 MW in Papua New Guinea7. The following table displays the amount of electricity generated in one year for 19 Pacific Island Countries (note that the figures only refer to electricity generated by the main electricity utility in each country). Generation in recent years remains below 200 GWh per year in most Pacific Islands except for Fiji, French Polynesia, Guam, New Caledonia, and Papua New Guinea. One may expect such differences to be caused by differences in population levels, which would explain why electricity generation is higher in Papua New Guinea than anywhere else. However, although domestic consumers

3 See http://www.elyo.com/business-uk/filiales/default.htm
7 Pacific Islands Renewable Energy Program (2004), Pacific Regional Energy Assessment
constitute the largest category of customers for most islands utility grids, they generally account for well under half of the total consumption of electricity.

<table>
<thead>
<tr>
<th>Country</th>
<th>Electricity Generated (MWh)</th>
<th>Year</th>
<th>Source</th>
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<td>Cook Islands</td>
<td>29,758</td>
<td>2002</td>
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<tr>
<td>Federated States of Micronesia</td>
<td>85,900</td>
<td>1997</td>
<td>PIREP report table 2.4</td>
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<td>Fiji</td>
<td>6,997.66</td>
<td>2003</td>
<td>PIREP report tables 3.2 and 4.11</td>
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<tr>
<td>French Polynesia</td>
<td>514,900</td>
<td>2005</td>
<td>EDT</td>
</tr>
<tr>
<td>Guam</td>
<td>1,876,708</td>
<td>2004</td>
<td><a href="http://www.guampowerauthority.com/operations/generationupdate.html">www.guampowerauthority.com/operations/generationupdate.html</a> (date: 31 may 2006)</td>
</tr>
<tr>
<td>Kiribati</td>
<td>15,900</td>
<td>2003</td>
<td>PIREP report table 2.6</td>
</tr>
<tr>
<td>Nauru</td>
<td>33,000</td>
<td>2000</td>
<td>ADB Key Indicators 2003</td>
</tr>
<tr>
<td>New Caledonia</td>
<td>1,677,527</td>
<td>2004</td>
<td>ISEE Bilan Energie Nouvelle Caledonie 2004</td>
</tr>
<tr>
<td>Niue</td>
<td>3,369</td>
<td>2002</td>
<td>PIREP report table 2.2</td>
</tr>
<tr>
<td>Palau</td>
<td>104,066</td>
<td>2003</td>
<td>PIREP report table 2.6</td>
</tr>
<tr>
<td>Papua New Guinea</td>
<td>3,178,000</td>
<td>2003</td>
<td>APEC energy overview 2005</td>
</tr>
<tr>
<td>Samoa</td>
<td>93,070</td>
<td>2003</td>
<td>PIREP report table 2.3</td>
</tr>
<tr>
<td>Solomon Islands</td>
<td>86,887</td>
<td>2002</td>
<td>PIREP report table 2.8</td>
</tr>
<tr>
<td>Tonga</td>
<td>34,000</td>
<td>2003</td>
<td>ADB Key Indicators</td>
</tr>
<tr>
<td>Funafuti (Tuvalu)</td>
<td>4,658</td>
<td>2003</td>
<td>PIREP report table 2.7</td>
</tr>
<tr>
<td>Vanuatu</td>
<td>47,148</td>
<td>2002</td>
<td>PIREP report table 2.4</td>
</tr>
<tr>
<td>Wallis and Futuna</td>
<td>13,000</td>
<td></td>
<td>ELYO website</td>
</tr>
</tbody>
</table>

The graph below, which displays electricity per capita in Pacific Islands, shows that the discrepancies in electricity generation among different islands cannot be explained solely by differences in population levels. Firstly, as previously stated, electricity may not be available to the entire population in each island. For instance, according to the PIREP team, less than 10% of the population of Papua New Guinea was electrified in 2004 (Pacific Islands Renewable Energy Program (2004), Pacific Regional Energy Assessment, Vol. 10, pp. 24). Secondly, and more importantly, a large part of the electricity generated is consumed by industrial, commercial and government customers. This explains why electricity generation is much lower in places where economic activity is not focused towards energy intensive activities such as industrial applications, such as in Niue. For instance, the nickel industry accounts for more than half of the electricity consumption in New Caledonia, and the developed tourism, commercial and U.S. military sectors use a large part of the electricity generated in Guam. Electricity per capita is also relatively large in Palau, which may come from military activities, as well as large constructions and infrastructure development, mostly for tourism. In 2003, tourist arrivals numbered 63,000 for a population of about 20,000 so that tourism intensity is high, which suggests that the tourism sector is a major power consumer. The widespread

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8 Institut de la Statistique des Etudes Economiques (2004), Bilan Energie Nouvelle Caledonie.
use of air conditioning in government offices and hotels may also account for a large part of electricity consumption.

### Electricity per Capita

<table>
<thead>
<tr>
<th>Country</th>
<th>kWh per capita</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cook Islands</td>
<td>0</td>
</tr>
<tr>
<td>Federated States of Micronesia</td>
<td>0</td>
</tr>
<tr>
<td>Fiji</td>
<td>0</td>
</tr>
<tr>
<td>French Polynesia</td>
<td>0</td>
</tr>
<tr>
<td>Guam</td>
<td>0</td>
</tr>
<tr>
<td>Kiribati</td>
<td>0</td>
</tr>
<tr>
<td>Nauru</td>
<td>0</td>
</tr>
<tr>
<td>Niue</td>
<td>0</td>
</tr>
<tr>
<td>Palau</td>
<td>0</td>
</tr>
<tr>
<td>Papua New Guinea</td>
<td>0</td>
</tr>
<tr>
<td>Samoa</td>
<td>0</td>
</tr>
<tr>
<td>Solomon Islands</td>
<td>0</td>
</tr>
<tr>
<td>Tuvalu</td>
<td>0</td>
</tr>
<tr>
<td>Tonga</td>
<td>0</td>
</tr>
<tr>
<td>Wallis and Futuna</td>
<td>0</td>
</tr>
<tr>
<td>Funafuti (Tuvalu)</td>
<td>0</td>
</tr>
<tr>
<td>Vanuatu</td>
<td>0</td>
</tr>
</tbody>
</table>

III) Electricity Supply in Outer Islands and Remote Areas

In most countries, rural and outer island electricity supply is characterised by small diesel generators as well as individual solar home systems. Electricity in rural areas is generally provided by provincial utilities owned by island councils, public works departments or cooperatives (except for Vanuatu, French Polynesia, Wallis and Futuna and New Caledonia, which have privately-owned utilities), but the management, maintenance and quality of service provided by such systems is generally poor. For example, many of the small rural supply systems (called C-centres) which have been installed in Papua New Guinea are no longer operating. In many outer islands, local schools, health centres, resorts and households operate their own small diesel generators.

The cost of electricity supply in such areas is higher than in the main islands. Operation costs of the diesel generators are often exacerbated by low fuel efficiency due to poor

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maintenance, mostly because of a lack of spare parts and skilled staff. Government subsidies for rural electricity tend to be high, although subsidy arrangements lack transparency and are inconsistent in most cases. Prices charged to consumers are often the same as in urban areas despite a large difference in supply costs. Electricity is available less than 18 hours per day in most outer islands. Households thus rely on a wide range of energy sources for cooking and lighting, particularly firewood and kerosene. However, irregular fuel supply and poor fuel handling are typical in outer islands. Fuels are often transported from the main islands to outer islands in 200 litre drums by ship and small boats. Sometimes, the drums are even floated from small boats to the shore. While problems such as leakages, rusting, corrosion and shortages of drums are not uncommon in outer islands, such inefficient fuel transportation and distribution processes are unlikely to change due to the low inherent levels of demand and consumption.

The development of reliable electricity supply systems in remote areas has often been claimed to be a government priority. Although all Pacific Islands have at least an implicit rural electrification policy, such policies are often unclear and particularly ambiguous with respect to responsibilities. A large number of rural electrification projects have been funded by international aid and donor organisations from Australia, New Zealand, Japan and Europe.

### IV) International Aid for Electricity Supply in Pacific Islands

International aid agencies and organisations have provided funds and technical assistance for a large number of projects since the late seventies. Such projects mostly involved the installation of renewable energy technologies as a source of electricity supply, mostly solar photovoltaic systems, solar water heaters, and hydroelectricity. Note that most of these projects focused on rural areas and outer islands, for which, as stated above, electricity supply is typically poor. The objective of such assistance was thus often to boost development in rural areas by improving electricity supply using sustainable, environmentally-friendly energy sources.

The Asian Development Bank has provided assistance to a large number of countries, including the Cook Islands, Fiji, Micronesia, Marshall Islands, Samoa, Solomon Islands, Tonga, and Vanuatu. Such assistance often came in the form of loans for improving or upgrading main electricity grids (Cook Islands, Kiribati, Tonga, Samoa), but also in the form of technical assistance for electrification in outer islands, power sector reforms (Tonga), and case by case studies for outer island power development (Cook Islands), infrastructure development, energy development plans (Vanuatu), which often recommended the use of renewable energy and the improvement of energy efficiency.

The European Community has provided a major contribution to outer island electrification, particularly with the installation of solar photovoltaic systems, through large funding programmes resulting from the 1975 Lomé Convention, the Lomé II Pacific Regional Energy Programme, and the Cotonou Agreement between the European

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Union member states and Africa, Caribbean and Pacific states. Solar energy has thus been promoted and developed in a large number of countries, such as Fiji, the Marshall Islands, Nauru (grid-connected solar photovoltaic), Palau, the Solomon Islands (photovoltaic refrigeration for provincial health clinics), Tonga, and Tuvalu. Other projects involved the identification and promotion of new and renewable energy sources as part of outer island development programmes (in Micronesia), assistance for hydropower in Samoa, and electricity generation with a wood gasifier at a rural high school in Vanuatu.\footnote{12 Pacific Islands Renewable Energy Program (2004), \textit{Pacific Regional Energy Assessment}, Vol. 16, pp. 28.}

The Japan International Cooperation Agency has helped many Pacific Countries with grants and funds for power upgrades, solar photovoltaic installations (Marshall Islands) and technical assistance, construction of a hydroelectricity plant in Vanuatu, and studies such as the Master Plan for Power Development for the Solomon Islands in 1999. Other donor organisations, such as AusAID, New Zealand Aid, Canada Aid, have been involved in training workshops, feasibility studies for electrification and hydroelectricity, and funding for solar photovoltaic projects.

The contribution of the World Bank to energy projects in Pacific islands has been minimal, with a loan in 1987 to finance a major hydropower project in Samoa, and a joint study with UNDP to assess biomass energy use and prospects in Samoa. However, other large organisations such as the United Nations, UNESCO, ESCAP, have undertaken surveys, studies and investigations, legislation reviews, and provided funds for projects such as solar photovoltaic installations for rural health centres. In 1984, Save the Children and USAID funded and put in place the chief agency responsible for developing solar energy in outer islands (TSECS). The initial funds for SEC, the government-owned company responsible for solar energy in Kiribati, were also provided by USAID.

Regional organisations involved in Pacific Islands electricity and energy projects and studies include the Secretariat of the Pacific Community, the South Pacific Applied Geoscience Commission, and the Pacific Power Association. The SPC has put in place a programme called the Pacific Renewable Energy France Australia Common Endeavour programme, which, with funds from France and Australia, has successfully implemented solar projects in the Marshall Islands, Tonga, and Vanuatu, as well as a wind project in the Cook Islands. From biomass to hydroelectricity and solar photovoltaic, SOPAC has been involved in a wide range of renewable energy projects, often providing technical assistance for donor projects, reviewing projects, or investigating renewable energy resource in Pacific Islands.

A striking feature from this brief overview of assistance from aid agencies is the recurring choice of solar photovoltaic as the technology used for electricity development programmes. This choice has been justified by the fact that solar energy is profuse in Pacific Islands, and that solar photovoltaic is a simple, commercially proven technology which can easily be implemented, and is suitable for low levels of demand. Solar energy is understandably an attractive, feasible solution for providing electricity while aiming at reducing the islands’ dependence on fuel products and promoting renewable energy.
(Lome II Pacific Regional Energy Programme). However, despite the relative simplicity of installing solar photovoltaic systems, a large number of projects have failed because of the institutional context chosen for their implementation. Not only solar systems require regular maintenance, such as the replacement of batteries, but typically a large number of individual systems are also installed at the same time for a given project, which means that planning and organising the operation and maintenance of the systems is crucial. The sustainability of solar systems depends on a wide range of issues such as who owns the systems, who maintains them, and who pays for them; particularly in outer islands and poor villages. Hence, although installing solar systems may be easy and rapid, past experience has shown that agencies should not be lured by this simplicity, as solar photovoltaic systems require much more than that to last more than a few years.

V) Electricity consumption in Pacific Islands

Demand for electricity in Pacific Islands can be considered relatively low, primarily because of the small size of their economies, but also because a range of different energy sources are used by consumers. Although the traditional use of biomass for household cooking has considerably declined in the past decades, it remains widespread in the rural areas of some Pacific Islands, notably in Chuuk (Micronesia), Vanuatu, Solomon Islands, Fiji and Papua New Guinea. Note that a particularly low proportion of the population has access to electricity in these countries: as previously stated, around 10% of the population had access to electricity in Papua New Guinea in 2003, only 19% of households were electrified through the Chuuk power utility in 2000, and only 16% were electrified in the Solomon Islands in 1999. Hence, the use of biomass is likely to be greater in areas with less access to electricity.

In most islands, however, the use of kerosene, and also more recently Liquified Petroleum Gas (LPG), have replaced that of firewood for household cooking. Electricity is mostly used for cooking in urban areas and islands such as Nauru and Niue, where most of the population is connected to the island grid. Note that households often use a combination of different sources for cooking purposes (for example, they may use biomass and kerosene, or gas and electricity). Kerosene and electricity are mostly used for household lighting. The use of low efficiency incandescent lighting has also been reported to be widespread in Palau.

The energy needs of Pacific Island households are thus met by a variety of sources, primarily kerosene, gas, biomass and electricity. This pattern is portrayed in the following graph, which shows the small contribution of electricity to non-transport energy consumed in some Pacific Islands for 1988/1989.\textsuperscript{13} Evidently, it is likely that electricity represents a much larger part of energy consumed in these islands nowadays. For instance, in 1998, electricity accounted for more than thirty percent of the total energy consumed in Samoa, compared to less than five percent in 1988. Unfortunately, recent energy balances are not available for any other islands.

\textsuperscript{13} The transport sector typically constitutes the largest consumer of energy in Pacific Islands and only consists of petroleum products. Including transport energy consumption would have understated the share of electricity for sectors which can choose between different energy alternatives to satisfy their needs (e.g. household choice between kerosene and electricity for lighting).
As seen in the previous section, electricity sales to industrial, commercial and government customers typically exceed sales to residential customers, especially for islands with an important industrial sector. Government facilities, hotels and other tourism related businesses constitute the biggest electricity consumers in islands with little or no industrial activity such as Niue.

In Pacific Island Countries, electricity consumption is thus closely related to the level and structure of economic activity. In most countries, electricity generation could vary intensely with the construction of a new business or resort, which can make predictions of demand growth difficult. Demand for electricity can be expected to rise as the economy, tourism and population grow, as well as if the population becomes more affluent (through an increased use of appliances such as televisions). In addition, improvements in the availability of electricity in outer islands (such as increasing the power supply from 18 to 24 hours per day) are likely to be followed by increases in electricity use. Indeed, experience with a shift in the power supply from 12 to 24 hours in Rakahanga (Cook Islands) has led to about a 75% increase in energy use with a similar appliance mix (PIREP report Cook Islands).

VI) Cost of power supply

The following table displays the latest available estimates of electricity supply or generation costs across different Pacific Islands. It is important to note that such data were gathered from different sources and across different years. These figures should
only be considered as indicative. All the estimates available were converted to 2005 US$ for an easier comparison. Estimates of electricity supply costs across both main and outer islands were only available for the Cook Islands, Marshall Islands and Fiji. Such estimates confirm that electricity supply is much higher in outer islands, the most striking example being in Fiji, where supply to rural areas of Ovalau was ten times more expensive than supply to urban consumers of Viti Levu (the main island) in 2001. Note that supply costs can also be substantially different across main islands.

<table>
<thead>
<tr>
<th>Country</th>
<th>Main Island cost of electricity supply per kWh</th>
<th>Outer islands cost of electricity supply per kWh</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cook Islands</td>
<td>Rarotonga: $0.22</td>
<td>Aitutaki: $0.27 Atiu: $0.36 Mangaia: $0.34 Mitiaro: $0.53 Mauke: $0.46 Penrhyn: $0.53 Manihiki: $0.46 Rakahanga: $0.55 Palmerston: $0.62 All outer islands: $0.36</td>
</tr>
<tr>
<td>(1998 costs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fiji</td>
<td>Viti Levu Urban: $0.09 Viti Levu Rural: $0.24</td>
<td>Vanua Levu Urban: $0.19 Vanua Levu Rural: $0.58 Ovalau Urban: $0.18 Ovalau Rural: $0.90</td>
</tr>
<tr>
<td>(2001 costs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marshall Islands</td>
<td>Majuro: $0.076</td>
<td>Ebeye: $0.14 Kili: $0.16 Bikini: $0.31</td>
</tr>
<tr>
<td>(2004 costs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tonga</td>
<td>Tongatapu: $0.23</td>
<td>Ha'apai Outer Islands: Nomuka: $0.54 Ha'afova: $0.64 'Uiha: $0.55 Ha'ano: $0.53</td>
</tr>
<tr>
<td>(1999 costs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tuvalu</td>
<td>Funafuti: $0.97</td>
<td></td>
</tr>
<tr>
<td>(2000 generation cost)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Why are electricity production costs so high in Pacific Islands? And why do such costs differ so much between islands?

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14 All figures were first converted to $US using an average of the relevant year’s conversion rates with the currency converter from http://www.oanda.com/convert/fxhistory. Then the inflation calculator from http://www.westegg.com/inflation/infl.cgi was used to convert $US from different years to 2005 $US.
Firstly, fuel costs, and particularly fuel transportation costs, are expected to constitute a major part of production costs. This explains why electricity supply is more costly in outer islands: as fuels are usually imported through the main islands, the further and smaller an island is from the main island, the more expensive it will be to transport fuel to this island. The graph below illustrates this intuitive pattern, with the example of the Cook Islands. Note the island of Aitutaki directly imports its own fuel, which explains why it has a cost of supply lower than that of Mangaia and Atiu. Secondly, as displayed by the second graph below, economies of scale seem to be a relatively significant component of supply cost.
Electricity Tariffs in Pacific Islands

Electricity tariffs are generally established by the utilities, and reviewed by the cabinet or the government department responsible for electricity, who must give their approval before any tariff increase. In Tuvalu, tariffs are set directly by the cabinet. In Palau, the utility can only change its tariff after public hearings. In fact, the utility can set whatever tariff it wants as it is not bound by the results of the hearings, but it has incentives to keep the prices down as tariff is considered to be a major political matter in Palau. Except when a variable fuel rate is included, tariffs are typically not altered very often nor regularly; sometimes electricity prices remain unchanged for years. For instance, the same tariff was imposed between 1993 and 1998 in Samoa.

In some countries (Kiribati, Marshall Islands, Nauru, Tuvalu) the tariffs are very simple, involving a flat rate for different types of customers (residential, commercial and government customers). The most uniform tariffs can be found in Tokelau and Niue, where the government corporations charge a single tariff for all users, except that a higher tariff is charged for the use of air conditioners in Niue. In Nauru, a simple tariff has been imposed since 1990 but there has been very little fee collection from residential customers since 2003 due to a financial crisis.

In the Cook Islands, Fiji, French Polynesia, Micronesia, and Papua New Guinea, tariffs vary according to the type of customer as well as monthly, with higher rates for higher consumption levels (except in Fiji). Some utilities offer “lifeline tariffs” to low-income customers. Lifeline tariffs refer to the lower rates associated with low consumption levels. Such tariffs are charged to customers with a consumption of up to 30 kWh per month in Papua New Guinea, 50 kWh per month in Samoa, 60 kWh per month in the Cook Islands, 100 kWh per month in French Polynesia, Kosrae and Yap (Micronesia) and 500 kWh per month in Palau. In some countries, such as the Cook Islands, Fiji, Papua New Guinea, the Value Added Tax applies to electricity sales.

Electricity utilities in Tonga, Vanuatu, Guam, Chuuk, Palau and the Solomon Islands impose much more complex tariff structures with, for each type of customer, a rate which involves a minimum monthly charge, a fixed rate and a fuel surcharge which is adjusted monthly or every six months. In Vanuatu, such adjustment is made quarterly and is based not only on fuel prices, but also on wage rates, an index of material costs, and exchange rates. EPC (Samoa) was also considering the adoption of a fuel surcharge in 2003; however it is unknown whether the tariff has been modified. Although it may be a sensible decision from the point of view of electricity utilities, adjusting electricity tariffs to fuel prices in Pacific Islands is likely to worsen the vulnerability of such economies to fuel prices by reinforcing price fluctuations.

As mentioned previously, a number of utilities (in Fiji, French Polynesia, Kiribati, Palau, and Solomon Islands) impose a national tariff, meaning that they charge the same price in different islands or areas. When prices charged are below the marginal cost of supply, such pricing practices involve high cross-subsidies from customers in the main islands or urban areas to customers in outer islands, given the substantial difference between distribution costs to urban and rural areas. In Tuvalu, customers in Funafuti (the main island) are charged a higher price than in outer islands, even though supply costs are higher in outer islands.
Most public utilities fail to recover their short run marginal costs and rely on government subsidies to operate. This is because the tariffs charged to consumers are much lower than the marginal cost of production; this condition is often required by governments (Tuvalu). In most cases, such financial difficulties have hindered the maintenance and expansion of utilities, often resulting in high transmission losses or outages.

V) Energy Policy and Legislation in Pacific Island Countries

In most countries, a small energy department is responsible for national energy policy planning and implementation, although responsibilities related to energy matters are often unclear and overlapping between different departments. In Nauru and Niue, there is no energy department; in Niue the electricity utility is in charge of energy planning while three other departments individually take care of issues related to fossil fuels, biomass and photovoltaic water pumps.

National energy policies have rarely been officially endorsed by governments in Pacific Islands (in 2004, only three countries had national energy policies with some form of official endorsement and two countries had prepared draft policies that were under review\textsuperscript{15}). In addition, national energy policies rarely provide specific guidelines and goals for implementation, such as priorities or budget preparation. According to the Pacific Regional Energy Assessment (2004), such policies are often compelled or influenced by donors or regional organisations and provide a limited coverage of energy issues, with emphasis on power sector investment needs rather than policy.

Legislation and regulation regarding electricity supply in Pacific Islands is limited. The only legislation relating to energy supply is the Renewable Energy Service Companies Legislation, which was prepared by UNDP and GEF in 2003 for Fiji\textsuperscript{16}. In most countries, the only legal document relating to energy supply is an Electricity Act which establishes the public electricity utilities, its responsibilities and exclusive right to generate, distribute and sell electricity. In Samoa, the EPC act does not give exclusive rights to the utility (EPC), but allows for EPC to issue permits required to generated electricity as it is the owner of the electricity grid. Similarly, SIEA and the TEPB issue licenses for electricity generation in the Solomon Islands and Tonga respectively. In Nauru and Niue, there is no formal legislation or regulation with regards to electricity supply; the utilities are simply required to respond to government orders. Note that electricity supply in rural and remote areas is rarely regulated, especially when the public utilities do not provide electricity to these areas. In the Cook Islands, for instance, electricity supply in only regulated on the main island, Rarotonga.

\textsuperscript{15} Pacific Islands Renewable Energy Project (2004), Pacific Regional Energy Assessment Volume 1 (Regional Overview Report), pp. 16-17.
\textsuperscript{16} Pacific Islands Renewable Energy Project (2004), Pacific Regional Energy Assessment Volume 1 (Regional Overview Report), table 1-10.
### Table 1: Sources of electricity generation in Pacific Island Countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Main sources of electricity generation</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Samoa</td>
<td>Thermal electricity, solar PV might also be used</td>
</tr>
<tr>
<td>Cook Islands</td>
<td>Mostly diesel generators. Solar photovoltaic, solar water heating and wind energy are also used. The wind generator was installed in Mangaia in 2003 and consists of two 20 kW turbines. Note that in early 2004, 10.9% of homes were using biomass for cooking.</td>
</tr>
<tr>
<td>Federated States of Micronesia</td>
<td>Diesel generators are used by the state utilities. There is one run-of-river hydroelectric plant in Pohnpei; however, it was not operating in early 2004 due to penstock problems which were costly to repair (it is unknown whether the plant has been repaired). In Kosrae, the construction of a 35 kW microhydro plant was started and abandoned in the late 1980s (PREA). Solar water heating and solar photovoltaics are also used. According to the 2000 census, 51.4% of households were using biomass for cooking in 2000.</td>
</tr>
<tr>
<td>Fiji</td>
<td>Hydroelectricity and thermal electricity are the main sources. The contribution of hydroelectricity to the total production of electricity has declined from 92% in 1995 to 55% in 2003, but several mini and micro hydropower projects were under consideration in 2004. In 2003, Fiji Electricity Authority was operating a 83.2 MW hydropower plant in Viti Levu, and a 0.8 MW hydropower plant in Vanua Levu. Solar photovoltaic and solar water heating are also used. In 1997, PV and wind energy were integrated with an existing diesel generator at Nabouwala government station in Vanua Levu. There are eight 6.7 kW wind turbines, 37.4 kW of PV and 200 kVA of diesel. Initially, wind and solar did contribute over 60% but this fell steadily to less than 15%. Because fees only cover 30% of operating costs, PWD has no incentive to maintain the wind and solar components as diesel operation is easier and better understood than maintaining and including the wind and solar components.</td>
</tr>
<tr>
<td>French Polynesia</td>
<td>Electricité De Tahiti, the main electricity provider in French Polynesia, reports that 2/3 of its production comes from thermal power plants with diesel motors, and 1/3 comes from hydropower. (source: <a href="http://www.edt.pf/edt/web/webedt.nsf/pages/rp_tech_prot_index.html">http://www.edt.pf/edt/web/webedt.nsf/pages/rp_tech_prot_index.html</a>) In addition, there are 2 wind turbines of 50 kW in Rurutu, and also a hybrid power plant combining solar and diesel generation in Makatea, with 300 solar panels of 45 kWc; and a production of about 50 000 kWh/year. Programme PHOTOM: Solar photovoltaic electrification of remote areas: today, about 1200 installations and a production of about 1GWh/year. Photovoltaic installation at the University of Tahiti: 63 kWc, 80 000</td>
</tr>
<tr>
<td>Country</td>
<td>Energy Sources</td>
</tr>
<tr>
<td>----------------</td>
<td>-------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Guam</td>
<td>Thermal power plants. Solar energy might also be used.</td>
</tr>
<tr>
<td>Kiribati</td>
<td>Thermal electricity is mostly used; solar pumping and solar photovoltaic are also used and provide most of the electricity in outer islands. Note that biomass is the primary fuel for cooking on all islands except Tarawa and Kiritimati.</td>
</tr>
<tr>
<td>Marshall Islands</td>
<td>Diesel generators are used for the main grid power. Solar PV is also used, particularly in outer islands.</td>
</tr>
<tr>
<td>Nauru</td>
<td>All electricity generation is by diesel.</td>
</tr>
<tr>
<td>New Caledonia</td>
<td>Electricity is produced from thermal plants, hydropower, wind energy, and solar photovoltaic. In 1997, about 76% of the total electricity production was generated from thermal plants, 23.5% was hydroelectric, and about 3% came from wind turbines. In 2004, 80% of the electricity came from thermal plants, 19% was hydroelectricity, and the share of total production from wind turbines increased to 0.7% (10 new wind turbines were installed in 2003, and 21 other new turbines were installed in 2004). Thermal electricity generation may have increased further with the construction of two new plants to satisfy the needs of the growing nickel industry (Source: Bilan Energie 2003 and 2004)</td>
</tr>
<tr>
<td>Niue</td>
<td>Diesel engines generate most of the electricity; there are some solar water heaters and solar PV installations</td>
</tr>
<tr>
<td>Northern Mariana</td>
<td>Unknown</td>
</tr>
<tr>
<td>Palau</td>
<td>All power generation is with diesel engines. Solar water heating and solar photovoltaic are used in some islands</td>
</tr>
<tr>
<td>Papua New Guinea</td>
<td>Hydroelectricity provides 32% of electricity generated; geothermal provides 1% and thermal (gas and fuel oil) 67%. (Source: APEC Energy Overview 2005). A few wind turbines were installed in farms in the Morobe Province after independence but it is not known whether any are still functioning. Commercial companies market and sell small wind generators.</td>
</tr>
<tr>
<td>Samoa</td>
<td>About half of Upolu’s electricity generation is from hydropower; the rest is diesel generation. The percentage provided by hydro varies depending on rainfall but there has been a downward trend as demand for power has increased whereas hydro capacity has not.</td>
</tr>
<tr>
<td>Country</td>
<td>Energy Sources and Uses</td>
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<tr>
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</tr>
<tr>
<td>Solomon Islands</td>
<td>Mostly diesel generators; some hydro and solar energy is also used, although hydroelectricity only accounted for about 1% of generation in 2003. In 2004, Solomon Islands Electricity Authority was operating two government-funded small hydroelectric plants on Malaita and Santa Isabel islands, with a capacity of about 30kW and 150kW respectively. Three other hydroelectricity projects were also under consideration by the government in 2004. Seven other small and micro hydroelectric systems have been developed by APACE, an Australian organization, and other systems have been operated by religious missions.</td>
</tr>
<tr>
<td>Tokelau</td>
<td>Diesel generators and solar photovoltaic. Biomass is used for some cooking.</td>
</tr>
<tr>
<td>Tonga</td>
<td>Diesel generators, there are also some solar photovoltaic and solar water heaters installations, especially in outer islands.</td>
</tr>
<tr>
<td>Tuvalu</td>
<td>Diesel generators. Except for cooking with fuel wood, very small scale coconut oil production (at a small Vaitupu oil expeller facility intended for soap production, not for energy) and attempts to provide outer island households with high efficiency wood stoves for cooking with biomass, solar photovoltaic and solar water heaters are the only renewable technologies used in Tuvalu.</td>
</tr>
<tr>
<td>Vanuatu</td>
<td>Diesel generators (provide more than 90% of generation), small hydroelectricity systems and solar installations. The government-owned Sarakata hydroelectric system is located at Santo. This two turbine 600 kW system was built by JICA and is operated by UNELCO, the main electricity provider. An expansion of the plant to 1200 kW was reportedly planned but it is unknown whether it has been carried out. One private company in Port Vila imports Vietnamese-made pico-hydro systems which cater for individual households or small communities.</td>
</tr>
<tr>
<td>Wallis and Futuna</td>
<td>Little information was found on electricity generation. It is likely to come mostly from diesel generators, but there may be other sources of electricity such as solar photovoltaic.</td>
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Source: PIREP Reports
The native islanders of San Andres, Old Providence and Santa Catalina: Dreaming between two worlds

June Marie Mow

ABSTRACT

The Archipelago of San Andres, Old Providence, and Santa Catalina is Colombia’s only oceanic and West Indies Department. These islands with a total land area of 57 square kilometers and a population of more than 83,000 are an island microcosm. The landscape includes farmland, tourist centres, isolated traditional settlements in Old Providence and densely populated sectors in San Andres.

Old Providence and Santa Catalina were first settled by English puritans from 1630 to 1641 (Kupperman, 1993). There is no known report about permanent settlement of the island of San Andres.

The imposed continental development model did not consider insularity and the close relationship between native islanders and their marine environment. The impacts of plans and projects designed and carried out by the centralized government have resulted in losses for the island’s natural and socio-cultural systems. The most isolated and smaller islands of Old Providence and Santa Catalina have also undergone socio-cultural changes, however cultural homogeneity has been very useful to reduce its negative impacts. Native islanders are aware that they share issues with the people from other islands around the world; similar trends include overexploitation of natural resources, habitat degradation, planning development in the absence of public involvement, poverty and social exclusion.

During the visioning process, the people on Old Providence and Santa Catalina chose ecotourism as their central platform of tourism development and as an essential component for the implementation of the SEAFLOWER Biosphere Reserve. Their aim is to maintain control of their present and future and be the leaders of their own development process. On the other hand, native islanders on San Andres Island – currently an ethnic minority on their own territory – dream about recovering their insularity and identity and sufficient autonomy to own and define their future.

KEYWORDS: Old Providence, San Andres, identity, development process, SEAFLOWER
1. INTRODUCTION

The Colombian Archipelago of San Andrés, Old Providence and Santa Catalina, isolated in the southwestern Caribbean, lies approximately 208 km east of Bluefields, Nicaragua; 720 km south of Grand Cayman; and 800 km west-northwest of Cartagena, Colombia (Figure 1).

The Archipelago is part of a country from which it is geographically and culturally isolated (Figure 2). The actual landmass with a total area of 57 km$^2$ consists of three major inhabited islands, five uninhabited atolls to the north of the major islands, and two atolls to the south and together with the marine area covers nearly 10% of the Caribbean Sea (CORALINA, 2000a). The Archipelago, declared the SEAFLower Biosphere Reserve belongs to the World Network of Biosphere Reserves since 2000.

The reef system of the Archipelago is extensive. One of the largest true barrier reefs in the Americas, the barrier reef off the islands of Old Providence and Santa Catalina alone is 32 km long and covers an area of 255 km$^2$ (Geister and Diaz, 1997).

The islands’ marine resources are used heavily by industrial fishers from the Colombian mainland and poached by vessels from mainland Colombia, Central America, and many Caribbean nations. The tourism industry, the free port shops owned largely by immigrants from continental Colombia and their descendants, and resident immigrants from foreign countries, mainly from the Middle East, and the human settlements (a rather large amount of odd shantytowns – more than 40) are the
principal sources of pollution and sedimentation due to inadequate solid and liquid waste management.

The Colombian Government has increasingly recognized that the management of the tiny remote oceanic islands is complex and that limitations are imposed by isolation, small land area, and distinct culture and social systems. However, they still need to understand that planning and management need to be based on linkages between biological systems - terrestrial, coastal, and marine - and societal systems. Or in other words, the entire islands, their resources and their people need to be considered. Additionally they should also acknowledge that native islanders once had the know-how to manage island natural and social systems and resources and have the right to be owners of their socio-economic development.

Native islanders on both islands are living between two worlds: the one they built until the 1960s based on community input and the one built with ideas imposed by the dominant one-sided continental model of development. To address their development needs, the native islanders from Old Providence initiated and led their own visioning process 12 years ago, their aim was to maintain control of their present and future and lead their own development process. The native islanders from San Andres however are facing serious problems to identify effective options and opportunities towards unity and organization of their people and are thus handicapped to start-up and maintain processes towards a long-term vision and community development. This is the reason why visioning processes on San Andres have been initiated and led by people from outside. The process in Old Providence and Santa Catalina has focused particularly on local initiatives to maintain economic control; in San Andres on recovery of land, identity and culture.

2. THE PEOPLE AND ITS CULTURE

San Andres, Old Providence and Santa Catalina are home to more than 80,000 people of which not all are native islanders. In fact on the larger island, San Andres, where the Free Port actually was the main economic activity, native islanders are a minority in their own territory. They have been outnumbered by continental Colombians and suffer various forms of discrimination due to their ethno-cultural background and survive under marginalized conditions that contrast with the modern world. It is important to point out, that also the poor Colombians who came from the coastal zones – both Pacific and Atlantic – black and white, suffer from discrimination and live under marginalized conditions.

Normally the people from the islands called themselves Natives but to avoid confusion with newborn belonging to the dominant Colombian culture\(^1\), in the mainland they are now known as *Raizales*.

\(^1\) Native. Belonging to a place.
Of African ancestry, they speak Creole, which has been described as an English-based language with much of Africa and the Caribbean in its vocabulary. An example of a Creole greeting is “Greetins to aal the pépl av di worl, wi lov unu” (Gallardo, 2003).

Surnames such as Howard, Pusey, Smith and MacDonald are traditional British names. Natives from Old Providence claim they are British, because they descended from Henry Morgan, this is how the story was related to Wilson (1973): “Providence people are descended from Henry Morgan and his sailors. Henry Morgan was an Englishman and a famous sailor and a pirate. Everyone was afraid of him and he was not afraid of anyone. Henry Morgan’s chief mate was a man called Berelski, a Pole. When Morgan left the island to attack Panama, this Berelski jumped overboard and swam back to the island. He changed his name to Robinson, and the Robinsons are now an important family on the island. Hawkins was also one of Morgan’s captains and the Hawkins family is also descended from this Hawkins”. The Natives are also descended from black slaves brought from Jamaica and other Caribbean islands. Once freed from slavery in 1834, the Natives were soon sole owners of the properties on the three islands.

Native titles are “Bampa” (for grandfather), “Bama” or “Bam-bam” (grandmother), “Beda” (brother), “Ta” or “Tita” (sister), “Taanti” (aunt) and “Con” (cousin) as well as “Pa” and “Ma” (Gallardo, 2003), although they also use the standard titles.

“The Natives are a carefree, quiet and easy-going people who learned long ago to live in harmony with their natural surroundings” (Gallardo, 2003). According to native islanders each island is closed, a world on its own. The existent barriers are not only physical and geographical; native islanders consciously build social isolation to maintain their culture. Insularity is thus seen as a useful tool to preserve ethnic differences: food, architecture, literature, oral traditions, music, religion, art, and language, of which the Creole language remains as key for the recovery of lost Caribbean elements. People have learned to depend on themselves, to be on their own and this makes them special and different. This is the reason why although San Andres people have adopted music, architecture, literature and religion, they could not entirely adopt to the new economic system and have been marginalized and set apart in their own territory. People on Old Providence and Santa Catalina can still live on the island of “yesterday” and carry out some of the activities of the old economy; they can remain independent and still survive.
On the other hand, smallness contributes to tighten the social “cobweb”, high sense of solidarity to help each other in every circumstance – lack of job, lack of money to buy food, lack of shelter, extending to protecting “drug dealers and traffic” when prosecuted by authorities are characteristics of small island societies. Backbiting and criticism are also part of their day to day life.

Insularity is also responsible for the fragility of the small islands. However, early settlers learned to deal with the availability of natural resources, water, land and sea and their uses. The alternatives were scarce; self-sufficiency and self-help were important elements towards sustainable islands, since external supplies were few, had a monetary value and cash was not available; creativity and innovation of native islanders were local assets, ideas were also locally owned and put to work for the development of the community.

3. THE COMMON PAST

The Islands were uninhabited up to the time Columbus discovered America; they were often visited by Mosquito Indians from the coast of Central America to trap sea turtles and collect bird eggs and guano.

The islands have been alternately possessions of Spain and Britain, however they were never settled by the Spanish, but by English Puritans (CORALINA, 2000b) – documented as the first settlers – who came and stayed because according to their testimonies “Good stock is plentiful; in fact the soil is exceedingly productive and nature here appears in abundant luxuriance, affording to the animal creation, the greatest profusion, with very little cultivation” (Collett, 1837)².

The islands were part of the Captaincy of Guatemala, afterwards they were placed under the Viceroyalty of New Granada, which later became Colombia. No Spanish government was ever set up on these islands.

In 1822 the Archipelago became part of Colombia, apparently there was an act of voluntary submission; some historians report evidence that the islands were however occupied to secure allegiance to Colombia from native islanders.

During 90 years thereafter native islanders were “virtually left alone”; they were self-sufficient and organized, had their own education, religious and justice systems. Then in 1912 the Colombian government made its first attempt to draw native islander “nearer” to the mainland by creating a political jurisdiction called intendancy³ and instituted a policy of colonization and Colombianization, imposing the predominant mainland Spanish language, religion and cultural expressions.

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² As described by a member of the Royal Navy in May 1837
³ Political-administrative government in which the Head of Government is designated by the Central Government
The major shift for the island of San Andres came in the 1960s after the dictator General Rojas Pinilla declared the islands a free port in 1953. The construction boom included airport, port, hotels and shops as well as housing for the immigrants, and brought along not only domestic and construction workers but also jobs that were against the identity, individual character and customs of native islanders. The illusion that San Andres is the free port of opportunity resulted in massive immigration of disadvantaged individuals and entire families.

The history of the smaller islands of Old Providence and Santa Catalina was very different, since they had no major role to play in this new economic system imposed by Colombia, because of their isolation from the main island; migration, uncontrolled growth and environmental as well as ecological damages were not as severe as on San Andres. The people in Old Providence and Santa Catalina maintained their natural and cultural assets; they have won many battles to keep out large tourism development projects planned by outsiders, such as time-share; for the majority of natives from Old Providence and Santa Catalina it is not a privilege to be an employee.

The changes in the number of inhabitants show the magnitude and impacts of decisions taken by the President of Colombia, far away from the Archipelago and the interests of native islanders: in 1952 they were 5,675 inhabitants in San Andres, twelve years after, in 1964 the number was 16,731, it had more than tripled; in 1973 there were 22,989 and reached nearly the double amount in 1988, it had increased to 42,315. Today they are more than 83,000 inhabitants.

The commercial tourism model defined by the free port collapsed in the early 1990s when Colombia took major macroeconomic decisions and loosened national trade restrictions.

4. THE SOCIO-ECONOMICS

Access to land and sea and the fruits they delivered, opportunities to farm the land and raise animals, as well as fish were equitable. The increasing demand for land, water and food by outsiders and their monetary capacity to purchase these, brought an opportunity for native islanders to exchange a good standard of living, co-operation and solidarity, abundance of food and scarcity of money, for a low quality of life, disowned from land, poverty, selfishness, lack of food and discrimination and leave them as “aliens” in their own territory.

Land use has been significantly modified from agriculture to housing and the infrastructure to satisfy the demands of uncontrolled growth, and with it the landscape has also been modified from one dominated by the natural scenery to one dominated by a man-made “landscape” with concrete buildings and shanty towns.

Swamps have been filled up and replaced by an airport, a port and “barrios” for the large areas needed to provide housing for the new residents at the cost of reducing the productivity and health, and destroying the habitat of the coastal and marine ecosystems.
Native islanders contributed to the loss of the ownership of their territory by forgetting the real value of land given to them by their slave ancestors and practically giving up their valuable “birth right” for low-value Colombian pesos; their lack of entrepreneurial spirit and financial skills led them to make short-term investments in vehicles such as second hand automobiles brought from Miami – with high gas consumption and maintenance costs - and boats which were used as taxis to take commercial tourists around. During the “economic boom” of the free port, up to the early 1990s, these vehicles could be easily replaced once destroyed by salt spray, however the increase in number of taxis reduced the income of taxi drivers and their capacity to maintain this activity.

Native islanders also stopped living off the land, set aside their skills in agriculture and fishing and primary production. Primary production closely linked to self-sufficiency on the islands was replaced by the service sector. Since food production decreased, import of canned goods and other less healthy products increased thereby contributing to the establishment of a new economy that would soon lead to narrowing the opportunities for survival of the native islanders.

Native islanders kept on being their own masters until they lost their means of self-employment and became employees and vulnerable to unemployment.

The tourist industry employs nearly 50% of the work force (native islanders are not well represented) while 37.48% are employed by the public sector (Connolly, 2000). In the year 2000 the national government imposed a new local administrative structure which led to severe cuts in the number of government jobs and worsened the already poor economic situation of native islanders, holders of the majority of the government jobs. The unemployment rate is estimated at 53.6%; almost 50% of the population has less than the World Bank's poverty criterion of US $1 per person per day (van't Hof, 2001).

4.1 Natural resources

The well developed barrier reef surrounds the islands to the north-northeast. In Old Providence the reef system covers approximately 255 km² and includes lagoons, sea grass beds and mangrove swamps.

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4 Once the construction boom was over, the construction workers coming from the mainland had to find new ways of livelihood and took over this niche until then once only occupied by native islanders
The research and monitoring component of the SEAFLOWER Biosphere Management Plan contributes to increase knowledge on biology and ecology of commercial species such as queen conch, spiny lobster and the black crab and key species such as sea turtles, snappers and groupers. The Archipelago is at the edge of the western flyway. The islands are also home to a wide variety of resident and endemic reptiles, insects and other invertebrates. Bats are the only reported terrestrial mammals (Howard et al., 2003).

The vegetation in the islands is classified as tropical dry forest. At the present time, 374 plant species have been identified which are distributed between 93 families; 70% of which are native with 23% known to be introduced (González et al., 1994).

4.2 Environmental services

Human activities are poorly managed; additionally local governments do not have waste management systems put in place. The garbage production on San Andres is approximately 100 ton/day and the open air dump has reached its capacity. Land is scarce and there is no known plan to address this problem. The greater demand for water and the lack of “water culture” of the immigrants – lack of awareness and good practices towards the use of water – are the causes for the overexploitation of the aquifers and the pollution of groundwater and coastal waters. Coastal water from a nearby mangrove swamp was used to cool the machines that produced the electricity in an open cooling system; this hot, oil polluted water discharged into the enclosed mangrove swamp destroyed almost 50% of the mangroves in Hooker Bight.

Photos 4, 5 and 6. Threats to the island ecosystems
The carrying capacity of water and public services limits current tourism development projects. Beaches and hills were exhaustively mined to provide contractors with sufficient building materials. This caused great damage to all island ecosystems – coastal ecosystems, watersheds and forest, the entire coastal zone of an island.

4.3 Social environment

Problems are over-population, spreading urbanization and the growth of shantytowns, as well as poverty, drug addiction, and inequity. The population expansion also created new problems relating to public health, education and security, and lack of social and environmental justice. There is despair and people struggle for scarce resources and opportunities. This situation is aggravated because the moral and ethical values of native islanders have also been adjusted to suit those of the newcomers; native islanders exposed intensely to the elements of the Colombian culture have begun a new process of adaptation and assimilation of their traditional Anglo-Caribbean culture. However many native islander groups, aware of the struggle between the two worlds and the consequences of the complete loss of their identity and extinction as an ethnic group, have risen up against the growth and socio-economic system imposed by the Colombian government and have made serious attempts to reaffirm and protect their people. Pastors of Baptist and Adventist churches are leading an initiative to take an active stand on issues related to native rights, equity, land and sea tenure, and self-determination; it is intended to unify and mobilize native islanders the way it was done by civil rights movement in the southern United States (CORALINA, 2000a).

A few successes are reflected in the Colombian Constitution of 1991: native islanders now have the legal protection granted to national ethnic minorities. The Colombian Constitution acknowledges English as the mother tongue of the native islanders and grants the archipelago two official languages - English and Spanish. It also states that native islanders have the rights to the lands, territories and resources that they have traditionally owned or otherwise occupied or used, and establish on them the management and governance system that best suits their cultures and social needs (CORALINA 2000a). However, this has not yet been recognized by the Colombian Government and its institutions. The policies are developed instead to integrate or assimilate native islanders into the model of the national culture of the dominant majority. Many national policies and programs are leading consciously or unconsciously to the destruction of the culture of native islanders. This minority group – even on its own territory – needs special policies to protect, promote and further its culture.

Many successes have not been sustained; frustration and blaming each other are obstacles to unity. Native people have to take the necessary steps to get organized and by so doing gain more control over their own land and resources, and to recover a standard of living in accord with their native tradition.
5. RESULTS

5.1 Community planning process

The approach includes a collection of methods, which together provide a decision-support tool. They include:

- Stakeholders’ analysis - the identification of stakeholders’ interests enables participants to understand the constituency of the three islands and ways to engage stakeholders at all stages of the process;
- a visioning process involving many participants at different levels and stages;
- focus groups and forums;
- interviews;
- needs and assets assessments;
- participant observation;
- public information and outreach events;
- research through surveys, questionnaires; and statistical research/data analysis.

Projects anywhere, but especially on small islands, require the active involvement of all players to be truly sustainable, those that have a lot to win or lose by decisions taken about the present and the future of a given community. It is the only way to receive the input of a broad range of ideas, experiences and in fact to allow all participants to enhance their knowledge and provide elements towards the whole picture of island development and to take decisions about the future they want to experience. It is the job of natives to get together and share their everyday, knowledge and experience with each other to develop the direction of the entire community who will be part of that future.

Native islanders of San Andres, Old Providence and Santa Catalina have different interests and carry out a variety of activities as part of their daily lives. Sharing and understanding these will help all involved create, own and implement a common vision.

Photo 7. Visioning workshop. Old Providence, 2006
As islanders and sea people it is probably easier to look at the visioning process with its ups and downs as follows: a) the island is drifting at sea - they have no idea where to start much less where they are bound for, there is nothing useful they can do, they are on their own; this is a wonderful beginning for new discoveries; 2) it is complex, the stakes are high, islanders, however test things they think are useful, not sure of doing the right things; 3) islanders begin to validate each others’ reality, and create their own conditions for interaction; they share understanding about the things that work – they may be not be self-sufficient at this point; 4) there is a shared picture of the island, different from the one each participant had at the start, now they are ready to make things happen – the dynamics or emotions of drifters once they see land, even if still far away; 5) anxiety is still a source of energy to begin the hard work, this includes mutual support, creativity and taking responsibility; 6) many have not taken part in the process, many are now committed, but their task and responsibility is to decide who has to be brought on board and when and how to transmit hope to achieve their commitment.

5.1.1 San Andres

Many plans have been produced for the development of the islands during the three last decades following a top-down approach however, these have not been implemented. Improvised programs carried out by national and local institutions have led to environmental degradation and a loss of ethnic identity and resulted in tensions between native islanders and continental immigrants. Among other reasons for this are language and cultural differences and exclusion from social and economic benefits (CORALINA, 2000a).

The relations between native islanders and the national government are tense. Natives’ rights to traditional fishing grounds (CORALINA, 2000a) are not recognized and respected, they have lost local control over the primary use of island resources and opportunities for natives to work in tourism locally are non-existent. The choices are between hard work, low-pay jobs on board cruise ships or hard work, extremely high-pay trips to traffic with drugs between Colombia and North America.

Since the Corporation for the Sustainable Development of San Andres, Old Providence and Santa Catalina (CORALINA) began functioning in 1995, the agency has been working to introduce new governance systems to administer the islands. CORALINA has worked continuously with and for the community; the community is subject to its own development and therefore has a right to take active part in the decision-making mechanisms.
One of the key roles CORALINA has played locally in decision making is empowering grassroots organizations through education and training. The efforts to strengthen local capacities and skills to plan and manage the SEAFLOWER Biosphere Reserve and MPA were understood as long-term programs with ups and downs. The programs encouraged learning by-doing in a two way process: the community taught natural resource and social science specialists about their traditional low cost methods to the use of marine and coastal resources, specialists in return shared new concepts and approaches to environmental management.

5.1.2 Old Providence and Santa Catalina

The planning process of Old Providence and Santa Catalina was triggered by decisions taken without the involvement of the community to build large scale time share condominiums and dive centers owned by outsiders on Old Providence. Individuals, business men and women and community groups felt that the consequences and impacts of these decisions on the cultural, social, economic and political setting of the island society would be mainly negative and far reaching and most likely only be the beginning of the replication of the growth model imposed on native islanders in San Andres.

The first actions of the created Civic Movement were awareness-raising, outreach and training among local inhabitants and public agencies; training topics included the Colombian legal framework for the protection of the native communities of the San Andres Archipelago and methods to apply participatory approaches granted in the Colombian Constitution of 1991. They also developed mechanisms to ensure that as stakeholders they had representatives on planning, consulting and management boards that were able to truly represent their constituencies and to ensure sufficient feedback.

As a joint effort, the Ministry of the Environment of Colombia, the Municipality of Old Providence and Santa Catalina, the Civic Movement and many individuals and organizations worked during 8 months using diverse methodologies to plan and carry out a long-term (20 years) development plan that emphasized the promotion of gender equity, the diversification of income-generating opportunities, and the improvement of local environmental conditions. The Municipal Development Plan was adopted as the development policy for the Islands by Municipal Decree 011 of 23 November 1994.

In order to support the implementation of the plan, CORALINA\textsuperscript{5}, the Ocean Conservancy and Conservation International along with ECOASTUR\textsuperscript{6} and other local stakeholder groups and grassroots organizations carried out planning

\footnotesize{\textsuperscript{5} The environmental agency for the Archipelago\textsuperscript{6} A local NGO}
processes that resulted in the formulation of three major plans between 2001 and 2004 – master, action and marketing – which serve as blueprints for the development of ecotourism in Old Providence and Santa Catalina. There is a need to attract more visitors to the islands to increase the income of local business owners, to successfully implement ecotourism and at the same time reduce extractive uses of marine resources.

5.1.3 Participation

Native islanders are part of the islands systems – both ecological and societal -, meeting their needs without exceeding carrying capacities is a major role of decision-making and good governance. The uses of the primary island resources - coastal and marine - remain under an open-access regime and contribute to conflicts between local users. The main conflicts are between divers and artisanal fishers and between industrial fishing companies and all local stakeholders. They are also minor conflicts among artisanal fisher groups derived from the use of illegal or unsustainable fishing gears by some fishermen.

User groups do not trust each other neither do they trust government agencies. CORALINA aimed at building trust with all stakeholder groups as a first step towards working together in ecosystem management.

There is a need to continue working with the major users and build capacity for them to participate in management and work together. Thus the fundamental task facing resource managers in the San Andres Archipelago is to select the most appropriate methods to mobilize participation, build capacity and strengthen non-governmental organizations (NGOs) and increase effectiveness and compliance by promoting stewardship, self-empowerment, and awareness, this will indeed benefit grassroots community groups.

The Providence Foundation aims at enhancing the on-going community participation program to support training, education, financial and technical assistance in independent project development, and create enabling conditions to allow natives to create their own model of development that offers new income sources based on rational use and management of the Archipelago's natural resources.

5.1.4 Education

Before CORALINA began its activities in 1995, native islanders and other stakeholder groups were not a part of the decision-making scheme in the Archipelago. The conventional top-bottom approach was widely used by all government agencies. People were not aware of their natural and social surroundings; they did not know the values of marine and coastal resources and their significance for the islands and its people. Within this framework,
CORALINA tasks included design and implementation of outreach programs to reach all groups – children, youth, women, teachers, fishers, divers, etc.; training modules for beginners with basic concepts such as coral reefs, mangroves, seagrass beds, biodiversity, ecosystem, habitat, and methods for participatory planning and management (Mow et al., 2003).

Short workshops with active involvement of participants were designed to avoid people getting tired and maintaining their interest throughout the process. A special program was designed to increase the awareness of school children, which included field trips during the holidays. Children and youth are important allies, because they share the messages more easily than adults; they can also address adults in a more open and uncomplicated manner, achieving more attention. The mouth-to-mouth communication works fairly well whenever you get engaged and committed children and youth to actively participate in outreach campaigns.

6. CHALLENGES

The visioning process in the San Andres Archipelago has to be based on a wide range of environmental, economic, and cultural situations within the overall definition of a tropical small island marine ecosystem. Local realities and limits must be recognized, these include inadequate public services and infrastructures, social problems including poverty, drug addiction, inequity, a centralized political system, and lack of native benefit and management autonomy; as well as the need for institutional transparency and respect for the community’s input. To begin a successful and long-term process within this context requires local ownership and direct involvement of as many as possible. Native islanders need to carry out an organized process – without any aid from outside – to define themselves, share their realities, views, interests and concerns. They should also understand that there is no need to wait for and expect that “the one omnipotent leader” will born; there is however the need for many community leaders to provide true meaning and purpose in the journey towards a better future for all islanders. The process is very useful to facilitate the dynamic of the leader group and follow through on the huge amount of work, time and emotional engagement required to bring a vision to life.

A voluntary start-up steering team could help set up the space or forum to identify effective options and opportunities towards unity and organization of the native community and begin recovering trust between native people. An option is to adopt a learning-by-doing approach with simple agreements to promote local empowerment and move people into concrete action.

The process should open up positive attitudes and create awareness that the potential for cooperation is far greater than the differences of opinion and views. The island offers a whole world of real choices to work together, create an engaging vision islanders want to own and become part of, challenges old and young, men and women equally, it becomes a “household process”.
7. CONCLUSIONS

The Archipelago of San Andres, Old Providence, and Santa Catalina is a Colombian territory. The cultural and linguistic characteristics of native islanders are different from those of mainlanders and closer to the Caribbean islands colonized by the English. Until the free port declaration in the 1950s, Colombia was absent from the islands, islanders governed themselves and did it quite well. Due to insularity, smallness and isolation islanders learned to survive on their own: their socio-economic lifestyle can be described as self-sufficient and independent, an egalitarian and classless social structure, essentially no technological development, a productive economy based on artisanal fishing and agriculture, a high quality of life (it was indeed a high standard one compared with the Colombian mainland and other western Caribbean societies) (Wilson, 1973), a system with no monetary wealth, and good management practices - particularly in the management of soil and freshwater resources, and solid and liquid waste. Native islanders are currently pursuing the recovery of traditional knowledge on conservation and self-sufficiency patterns; they are increasingly working towards the reestablishment of their subsistence economy - agriculture, small animal raising, and artisanal fishing.

Native islanders do not trust local and national public workers with their top-down planning and management approaches. Native islanders demand institutional reforms that take into consideration their traditional needs, knowledge, and request for autonomy in public management. Their priority is to increase national ownership\(^7\) of local visioning processes as a mechanism to gain support and confidence from all stakeholder groups and improve the effectiveness of the development programs. The recent report from Mow (2005) on the visioning process carried out in Old Providence and Santa Catalina in the early 1990s suggests that implementation has been unsuccessful because of lack of government commitment and support. For example, efforts to create enabling conditions and put into practice the Integrated Ecotourism Action and Marketing Plans for Old Providence and Santa Catalina depend for their success on the existence of broad-based political and private support. This requires the building of partnerships not only at the local level, but also at the national level, since major players in the Colombian tourism industry such as airlines and large tour operators are national-based. Without these elements, put together and interacting closely, the tourism plans remain as blueprints on shelves and desks and do not have possibilities to be carried out.

In San Andres, Old Providence and Santa Catalina, CORALINA institutionalized bottom-up approaches for planning and management and increased local ownership and leadership, generating significant pressures on the national government, and thereby elevating concerns to a broader national forum.

\(^7\) Put it on the national priority agenda
A visioning process is about multi-level leadership. Because it is a process, it is never done and can be replicated at all levels – island-wide, neighborhood, schools, churches, etc. It is permanently moving from ideas, maybe even vague ones, to concrete ones, to action that can generate tangible results and impact the lives and livelihood of islanders. In the process it is important to involve stakeholders in discussion with each other. During the process, the capacity of local people needs to be strengthened to develop common ground of the type of island they are seeking to achieve and of the role each individual, each organization and the community play in its construction. An important characteristic of the islands’ vision is the ownership by all stakeholders of the common ground. The diversity of opinions and of perspectives that characterize the various stakeholders should encourage all participants to take part in the visioning process; diversity should also be strengthened during the process.

Forums, meetings and workshops, as well as informal encounters are needed to give space and voice to individuals and organizations whose views and realities would otherwise not be shared by others. Coalitions and partnerships are important to take day-to-day action towards the common future.

8. REFERENCES


ISISA – Islands of the World IX

Island Sustainability Risks in Japan
—Risk Management and Case Study in Historical Events—

NAGASHIMA, Shunsuke.
Kagoshima University, Research Center for the Pacific Islands

Key Word: List of Island Events in History, Risk Control and Management,
Life-nomic Civilization, Island Sustainability, Categorizations of Impacts

1 Risk Management towards Island Sustainability; Case Study in Japan

Every island of the world is confronted with sustainability problems against many risks of peace, safety, ecology, economy and much else. We will show the typical island samples to consider the sustainability to meet each risk or the ruches of events. To consider strategies to confront sustainability problems, we have to evaluate the seriousness of the matter in present and in past. However some times, moderate impact or pain can be good medicine for morphogenetic advancement towards island sustainability. To confront some problems, organizations or communities can activate their governability attitude and function as a governmental unit. Endogenous morphostatic strategies are not always completely beneficial to the island sustainability. There may be some who are resistant towards progression in development, even heavy conservatism or dismal mood, and this may be an restraining element to youth or other volunteers who want to take part in the betterment of the island. On the other hand, exogenous criteria; nation-wide, global business and other threatening organizations, may act to ‘dis-value’ (by, I. Illichi) or destroy vernacular gender.

For island sustainability, the matters are always complicated. Therefore democratic decision making process and fine-tuning on the way to island sustainability (sometimes they have to choose turn pike theory), are very significant. These are sometimes on the way done by trial and error, for lack of information or experience. Mistakes are not harmful, if only they can make correct and learn from the mistakes. These are the way for island sustainability. Pacific Way (by Kamisese Mara) runs by democratic method, such as coming to terms by face to face long talk and mutual understanding with face by face.

Now that it is 21st Century, world is transcend step of Post Post-Industrial Society, where educate oriented philosophized communities are needed as the next. World economy is controlled by globalization and the informative society is going to use more and more digital device, however they may act against sustainability by expansion of regional gap as called digital divide, especially remote and small islands are under such conditions. They have to pay public interest and attention for islanders to recover the ill conditions under the new insularity of poor network society and guide to yubikidasu network society. Even so they should not change their essence of life, as human being will always be a biological existence, a cultural and spiritual existence and a social and economical existence, even when the world fills with incredible inventions.

Small islanders are the most typical human existence that lives hand-in-hand with the nature, who use appropriate skills, and who value human network. Beside nature, sea and human scale skill and human network. Their experience and wisdom becomes good tools to step up toward Lifenomic Civilization, in order to sustain sufficient conditions.

Some strategies for sustainability often cause trade-off results, and therefore the coordination for co-governance is needed for the inside and the outside with any stakeholder. We have to prepare some criteria and priority list for their coordination. For example; long horizon vs. short range, scientific law vs. socioeconomic benefit, comprehensive method vs. analytical method, quality priority vs. quantitative evaluation, faire trade vs. competitive marketing, endogenous development process vs. exogenous pressure, interpersonal resources vs. economic resources, empowerment vs. human capital development, hierarchical and structural priorities to QOL and so on. The matters,
confront the subjective commitment for co-governance by the islanders, especially by absorption into the mainland city or financial decline in their public sector, are very serious, so new coordinators or new systems are needed to sustain islands.

There are many hints or encouraging stories those conquest obstructions for sustainability. Success stories should be beautiful stories, however their situations are not set examples just as they have needed to hear. What we can learn from is the past experiences or else learning from the past of other islanders. The aim to correct the problems of island sustainability is to show the extent of the problems that affect sustainability in reality, and to know seriousness and the degree of the impacts to sustain island community, and also to categorize Island Risks. Every island has many risks, however every islanders are living on the history of over coming these hazards.

Now we can show the historical and contemporary samples in Japanese islands rather than the general theory of resource management and risk management for many objectives, and for their sustainable development.

2 The Taxonomy on the Risks and Events against Island Sustainability;
Process Development for Peace, Safety, Ecology and Economy
There are overwhelming examples of risks or events for islander’s life. However some criteria can be arranged to meet sustainability. See below.
Significance on the Risk;

② Loss: Huge for their Recovery. ex. Hateruma Is. 1/3 was dead by Malaria e.g. Tsunami in Okushiri, 5% was dead. They cannot live on the seashore
③ Damages: heavy enough, not only materialistic but also 3 lives of islanders (life-long effect, their physical and psychological conditions), e.g. refugee camp from the Awaji earthquake Pain or PTSD should be mitigated step by step with Professionals
Okushiri Experience→Awaji Support and Care→Sister Is. Relationship
④ Exposure: Prerequisite Environments for their Community Life; 5 Wares
Hard ware: Financial and Industrial Situations, Infrastructure
Institutional Resources (Public Services, Mutual Help System etc.)
Human ware: Demographic Conditions for their Next Generation aged society, exodus effects, bride famine, successor ⋅ ⋅ ⋅ ⋅
Spiritual ware: Humanity, Traditional Heritage and Island Identity
Heritage, generations of history teller and local wisdom, dialect
Ecological ware: not only Landscape or the base for Eco-industry (Eco-tourism, eco-fishery, eco-farming, island-therapy, thalasso-therapy etc.) but also Island Bio-Diversity.
Mentality base for a “Sense of Wonder” and Animism
e.g. Ogasawara Is. ↔Eco-tourism is main industry
⑤ Developmental Conditions: especially for their Next Generation:
Education, Skills, Job Opportunities, Equity, Human Resources for Youth
Stock base: Community Stock for Their Insurance
140 ys before, Okerabu: Shaso by T.Saigou
BHN(Basic Human Needs)→QOL; Hierarchy Structure
⑥ Trade-Off; Forestry (Hard-Ware) vs. Forest Reservation (Eco-Ware)
E.g. Yakushima← World Heritage
The Taxonomy of Events
A: Man-made Calamity
1 Great Disaster: War=Tragedy and Destructions
   Many Islands were Fort Islands where there were many restrictions
e.g. Ogasawara 10,000 Army, 10,000 Navy all over by tunnel
every islanders was forced to immigrate to mainland
Malaria, e.g. Hateruma Is.→Irriomote Is. 5 month, 1587 was
forced immigration between WW II, 99.8% was affected,
477(=30%) was dead.
Ship Bombing; Tushima(Tu-Is.) Maru Pupil Refugees from Okinawa
Children700+ adult1000→survival 227 only13%
Disappear Island from map: poison production process in secret harmed
workers and soil, Ookuno Is.; Poisonous Gas Museum
Okinawa: ground war in residential area, big scale sacrifice of islanders
destroy of cultural treasure, land use problems for navy and airmy
Air Attack, many e.g. Hoto Is.=school 2 teachers and 125 students
Fight to the Last Person (almost)=Iou Is.
Cure station for nuclear weapon; Nini Is. in Hiroshima
2 Community Level vs. Prefecture Gov.(watch and check obligation)
Illegal Waste Dumping. E.g. Te Is.
3 Pollution: Organic Mercury Compound→Fish →Concentration in Human Body
Minamata→Gosyonoura Is., Shishi Is.
4 Pollution: Hot water from nuclear power plant→Fishery, ex. Iwai Is.
5 Pollution: Cold water from Ocean Thermal Energy Conversion →Coral
(Nauru→Japan Tech.)
6 Development of Farmland→ Red Soil→Coral, ex. Okinawa, Amami Group Is.
7 Confinements in Leper Colony, e.g. Naga Is., Oo Is., Yagaji Is. ●●●
8 Heavy Taxes: island special, ex. Saki Group Is. (Miyako and Yaeyama)
9 Debts: the community return, Small Is ●●○100ys before
10 Crime; abduction, e.g. Sado Is. to North Korea

B Natural Disaster
Earth
① Volcano Eruption
Active Volcano=Hokkaido, Rishiri Is 8000ys before
Toshima Big Is=1741.8.18 Vol.,28 Tsunami(→1475death Hokkaido)
Line Is. Izu= To Is. 4000ys before, 1971 wall collapse
IzuOo Is. 1986 = all Refugee 30days
Kozu Is. 838, recently small frequent earthquakes
Miyake Is., from 1085, 14 times. 1643=Ako Village disappeared
1875=1 dead, 1940=11 dead, 1962, 1983 400houses was burn
2000=all Refugee (to 2005)
Mikura Is. 5400before lava dome
Hachijyo Is.=2 Mt., 1487 Famine several times to 17C.
Ao Is.=1785
Veyone Line Rocks and Myojin Rocks from 1870 appear or not
1952-53 Big Eruption in bottom 31=dead in boat
Smith Is. 1871 → new
Tori Is.=2Mt., 1903 1/4 area blew off, all 125=dead
1939 all Refugee (with Weather Station officer),
1965 frequent earthquakes→Weather Station Closed, 2002
Sofu Rock 1975 under water, sea color changed
Iou Is. 1880′s Steam Eruption→ still now on.
Goto, Fukue Is. 4Mt. 2-3000ys before
Iou Is in Kagoshima, 1934-35 under sea, new island Syuwa Isou Is.
Kuchierabu Is, 1841, 1933-34 NanaKama Village was disappeared
15 houses was burn, 8 dead, 26 injured
Tokara, Suwanose Is.; 1877 immigration → 1885 Gas uninhabited
Kuch Is., 6300ys before, 3000ys lava dome, Naka Is., 1914, 1949
Iou Tori Is. in Okinawa, 1664 some dead,
1904 everyone immigrated to Kume Is. in Okinawa, 1961 uninhabited
② Tsunami 1771 Miyako Is. (=2548 was dead) and Yaeyama
1933 Urato Is., Ojika Is., Kishinuma Is., 1960 from Chile attacked again
1983 Okushiri Is. 1993 Again Okushiri Is. max=29m height, 199=dead
④ Land Slide or Fall, 1964 Awa Is: by Earthquake 1.5m upheaval
→ 1974 Greater Land Slide: Town hall and Kindergarten was turn down
Akkeshi Small Is.= protection C.E. for the strong wind
⑤ Land Subsidence (by Volcanic Island)
Shin Is. = protection C.E. for the shore disappearance
Sinking Is.= some

Weather
① Typhoon · → Agricultural Structure and Many Damages
1959 65.8m/s Miyako Is.
1960’s Ao Is., Every Ship and Boat on land was Swept out
1966 85.3m/s Miyako Is. (more than, machine was broken)
1968 79.8m/s Miyako Is., 1970 78.9m/s Amami Big Is.
1977 67.8m/s Hachijyo Is., 1977 70.2m/s Isigaki Is., 2003 74.1m/s Miyako Is.
② Tidal Wave, recently often
③ Strong Wind; monsoon in winter, ex. Iki Is., the first gale of spring
④ Heavy Rain or Flood, hazard zoning is possible.
⑤ Damage from Salt, too much samples
⑥ Drought traditional problem
⑦ Climate Change and Sea Rise,
   Speed Gap of Evolution to meet the Change.
   Speed Gap of land creation by coral: Okitori Is.
   Mangrove planting are on the table for prevent hazard

Creature
② Exotic animal, Goat and dear in many islands
③ Exotic plants, some tree are the enemy to the other tree where birds nest
   Endemic species; Akagashira Karasubato (Red Head Pigeon like Crow)
④ Poison, ex. Habu Snake in Ryukyu ·
⑤ World Natural Heritage, Ramsar wetland, and their candidates
   Yaku Is. forest, Nagata beach in Yaku Is.
   Eastern Galapagos; Ogasawara, Ryukyus include Amami
⑥ Island Biodiversity; many risks
   Dead species; Toki (Ibis)← from China 100 is beading in Sado
   Too much is Red species and Yellow species
   These are not intangible phenomena for risks of human life in island

All of these are only sample studies, if we can do enough, we can make island list of sustainability. For the 1st step; each island list on sustainability. We can use the category above. 2nd step; we can add more categories too meet historical events on risks. 3rd step; we
can aggregate from sustainability list of all Japan’s islands. 4th step; we can see the sufficient conditions to see the sustainability problems of Japan’s islands in the past. 5th step; to each categories how islanders struggled, over came and came back from many difficulties. 6th step; many hints are arranged to prevent difficulties to each category. 7th step; we can think general theory for island sustainability against risks, in reality. After that we can get sufficient conditions to prepare any risk and step up strategy towards island sustainability.

3 Risk Management Process in the Island Community

1. Pre-risk Control (1) Prevention, Avoidance, Reduction, Variance
2. Pre-risk Control (2) Financial Management
   - Foundation→Protection→Real Estate→Investment→Speculation
3. Risk Financing; Holding (Saving), Transfer(Insurance)
   - Share with ex. Wakeno Iccho=Gadza Is.
5. Post-risk Control (1) ex. Hagi Islands for their Debt
   - Community Management as if Organization;
   - Cohesion, Adaptability, Functionality, Communication
   - Priority1= Rescue
   - Priority2= Basic Human Needs= 3 Life
   - Priority3= QOL
   - Priority4= Recovery Process
   - Priority5= Renaissance+ Identity Establishment
7. Re-establishment of Civil Defense as the Community Level
   - With NPO and Relay to the Net and Networking
   - Women’s Fire Defense ex. Tobi Is.
   - With wireless communication method from 1980’s
8. Recovery System in life-long (1)
   - Yanchuu; status like a slave= probably they are not so, Amami G.I.
9. Recovery System in life-long (2)
   - Restoration System using Tiny Islet;
     - Uu Is, Big Minade Is., Yuri Is, Small De Island
10. Hazard Control by Citizenship
    - Morale, Physical, Moral Hazard→Islander Empowerment
    - Human Rights and Responsibility

(List of Island Matter for sustainability⇔From each Island if we can list up detail.
We can see and add enough conditions for the risk control and management.)

4 Life Economy and Life-nomic Civilization

The Golden Road to the island sustainability is not always on Materialism but also on the Universal Model of economy in human long history from the beginning.

- Life economy; Hazel Henderson model is consisted by 3 layers,
  - I layer= Mother Earth Richness ⇔
  - II layer= Social Countervailing Economy ⇔
  - III layer= Market and Government Economy

These economic models are significant to Sustain the Island’s Future, where islanders can show Leadership for Life-nomic Civilization. Small is Beautiful, where islander’s customs are established to co-exist with nature, and can keep peace well. One can enjoy full relaxation; this is known as Island Therapy. If Environmental Management and Life Economy are predominant, mixtures of strategies for Island Promotion is always on the way to Island Sustainability.
A Sustainable Approach to Island Tourism Development –
Showcasing Pulau Segayang, Riau, Indonesia

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Introduction

Tropical islands are the epitome symbol of paradise and carefree relaxation, and at the same time are repositories for fragile ecosystems. The combination of the tourism industry plus the ecological and physical systems on an enclosed island environment brings with it a host of issues and problems in the management and operation of tourism, and its reconciliation with the natural environment. Unfortunately, we still have little understanding of many of these issues and problems. This paper is the product of on-going research to chronicle and better understand the impacts and changes that are taking place on a particular tropical island – Pulau Segayang, Riau, Indonesia (Figure 1). Pulau Segayang is currently undergoing transformation from a previously uninhabited island to one that is embracing tourism based on scuba diving, fishing, snorkelling and other nature-based activities, through the development of a resort - Coral Cove Resort - on the island. This research seeks to examine the changes that are taking place from a holistic point of view to present an entire picture of the tourism development and its subsequent impacts on a small island.

The overall research agenda will be to introduce the concept of sustainable island tourism development and to track the progress of turning the concept into reality on the island. Through understanding the biophysical and social interactions that are taking place within an all-inclusive island resort, an attempt is made to identify approaches and practices that operationalise the concept of sustainable island tourism development. The aim of the research will be to determine if tourism development on Pulau Segayang may serve as a model of sustainable island tourism development for the rest of the Riau Islands.

Specifically, this research seeks to:

- examine in-depth the development of tourism on one of Riau’s smaller islands;
- uncover the significant issues that impact upon the physical, cultural, political and economic spheres through the development of island tourism on Pulau Segayang; and
- highlight the lessons learnt that may be applicable in developing sustainable island tourism development.
Figure 1: Location of Study Site – Pulau Segayang, Riau, Indonesia (Periplus 2002)
Coral Cove Resort, Pulau Segayang

Coral Cove Resort is currently managed by a Singaporean, Mr. K. Y. Ng. The island spreads over 25 acres (0.10km²) and has an adjacent island (Pulau Segayang Bakau) that is about 10 acres (0.04km²) large, with a deep sea channel separating the two islands (Figure 2). Coral reefs and mangroves surround both islands, whilst tropical rainforest dominate nearly half of Pulau Segayang. The island is also home to a number of bird species – including the blue-breasted kingfisher. Mr. K. Y. Ng is currently building an ‘eco-resort’ – Coral Cove Resort - on Pulau Segayang and hopes to develop the resort in an environmentally friendly manner and to subsequently provide an arena for guests to experience nature (K. Y. Ng 2005, personal communication). Coral Cove Resort currently has 12 rooms built on stilts extended out to the sea, called kelongs (kelong is the Malay word for a wooden structure built over the sea by driving wooden poles into the seabed), and 8 rooms located on land. Coral Cove Resort’s official opening date is scheduled for June 2006 though small groups of guests have already visited and stayed on the island.

Figure 2: Rough Sketch of Island Map of Pulau Segayang (Mr K. Y. Ng, 2005)
To get to Pulau Segayang, guests will have to travel to Batam Centre (Indonesia) by ferry from HarbourFront Centre (Singapore), change to a minivan to travel along the Barelang Highway to Pulau Galang’s former Vietnamese Refugee Camp Jetty, whereby a speedboat will take them to Pulau Segayang. The whole journey takes about three and a half hours (from Singapore). The entire package trip that visitors to the island pay for the holiday includes the cost of all transportation, meals and accommodation. Activities available on the island include scuba diving, fishing, snorkelling, beach walks, hiking and a possible trip to visit nearby island villages. No local communities permanently reside on the island, leaving the island to be only inhabited by visiting guests and employed staff of Coral Cove Resort.

**Conceptual Framework**

The introduction of tourism to island destinations has brought with it a host of problems and issues that needs to be identified, addressed and reconciled. There are widespread and complex tourism controversies on islands that require detailed examination and careful scrutiny. Islands are dynamic and sensitive biophysical and ecological systems which are highly susceptible to changes brought about by anthropogenic activities (Doumenge 1985; McElroy and de Albuquerque 2002; Nuun 1994). These changes can have far-reaching, cascading impacts. Therefore, it is crucial that a sound understanding of the range of impacts and its interrelationships is developed. Unfortunately, our knowledge of the impacts – the physical, social and economic impacts – that tourism has on natural areas is very limited (Hall and Boyd 2005; Pattullo 1996; Pigram 1980).

Sustainable tourism development is believed to hold the key towards establishing an effective and accepted solution to the problems of negative tourism impacts and preserving the tourism industry’s long-term viability (Lim and McAleer 2005; Liu 2003), and is one step towards reconciling the conflicts that may occur through the energetic interrelationships between the tourism industry, the visitors, the natural environment and host communities (Bramwell and Lane 1993). For tourism to contribute to sustainable development, it must satisfy the key criteria of being economically viable, maintaining ecological integrity, and supporting cultural heritage (Shaw and William 2002; UNESCO 2001; Wall 1997).
It must be recognised at the onset that sustainable tourism in its truest form may never be achieved as this implies a possible end stage. This contradicts with the fluidity and complex dynamism that characterises human interaction, environmental evolution and institutional dynamics. It is thus the process of trying to achieve sustainability that marks the difference between industries that incorporate the principles of sustainability to the others that claim to be so just to jump onto the latest bandwagon trend in the tourism industry.

Alternatively, rather than simply defining sustainable tourism, it might be more advantageous to determine to what effect tourism can contribute to sustainable development, as tourism is but one sector within the economic, social, political and ecological world (Sasidharan and Thapa 2002; Wall 1997; Weaver 2000). Studies have attempted to define, conceptualise and apply sustainable tourism, but many have failed to acknowledge that the tourism industry constitutes only one – albeit complex - component in the entire economic, ecological and social spheres in which humans and the environment interact (Shaw and William 2002; Southgate and Sharpley 2002). In other words, for tourism to be truly sustainable, it needs to be related to the wider, regional environment and analysed with that perspective in mind. Any analysis of the tourism industry which fails to take into account the wider interactions and relationships will simply be perpetuating a contradictory concept of sustainable tourism.

Trying to tie island tourism and sustainability together is thus a complicated and tricky procedure. The attempt to reconcile an abstract concept with practical application is the main driving force in this research. Whilst concepts are important in illuminating phenomena, it is the practical application that will most directly benefit communities – both human and ecological communities.

Throughout the course of this research, I will be guided by the following Operational Research Question:

*Has island tourism on Pulau Segayang developed in tandem to the principles of sustainable island tourism development?*
To answer the research question, I will firstly need to define explicitly what the principles of ‘sustainable island tourism development’ are. Sustainable tourism encapsulates the vibrant mix of economic, ecological, political governance and social components. Specifically, it is the interaction and dynamic relationships of different components that produces a synergistic and continually evolving journey. Pulau Segayang’s experience is diagrammatically represented in Figure 3. Each component interacts with all the other components, affecting each other in a fluid and dynamic relationship. The smaller box with the broken lines (symbolising the fluidity of island systems) signifies the primary components necessary for island tourism development, whilst the outer box encompasses the external influences that impact on the island tourism system of Pulau Segayang. It is the recognition of these components and the understanding of their interrelationships with each other that underpins this research, and that highlights the possibilities of developing island tourism along the principles of sustainable development – in other words, an analytical systems approach to acquire and depict integrated knowledge and critical perspectives (McElroy and de Albuquerque 1990).

![Figure 3: Pulau Segayang’s Island Tourism System](image-url)
Methodology

Sustainable tourism is of importance for geographers because the relationship between the environment and the tourism industry, and the resulting changes are all areas whereby effective management may forward the pursuit of sustainability (Butler 2000; Gössling 2002). Unfortunately, sustainability is a generalised and contested concept and there has been little work to attach specific costs and benefits to its implementation (Butler 1998). Therefore, this research aims to identify the operational entities of an abstract concept, and to measure its practical applicability. This research will focus on the process of attempting to achieve sustainability, of the journey taken, the progress made and the continual dynamics that take place.

Coral Cove Resort on Pulau Segayang will be the case study upon which the practical definition of sustainable island tourism development will be determined and assessed. A multi-disciplinary approach, characteristic of case studies, is pivotal to integrate the physical, social, environmental, economic and regional implications that constitute sustainability. It is impossible to define sustainability if either the physical or the human interactions that are occurring on the island are the main or only focus of study. Instead, a holistic case study approach that integrates numerous aspects will provide a more inclusive and coherent portrayal of the various interactions and impacts that are occurring on the island and that will affect the path to sustainability.

A key feature of the case study approach is the usage of multiple sources of evidence that converge together and is presented as a unified whole (Yin 2005). As will be shown below, a range of methods are utilised to uncover data from numerous sources which will then converge together to present a model of small island tourism development. This will involve the use of both quantitative and qualitative methods, plus both human and physical approaches to achieve an embedded case study with a holistic viewpoint. Table 1 summarises the different methods employed pertaining to the individual components identified in Figure 3. In my attempt to define sustainability, value judgements will have to be made in deciding what is important to study and to take into consideration. At the end, I will also have to carefully reflect on the entire research process, to ascertain if sustainability may truly be determined and reduced to entities that may be measured.
Table 1: Research Methodology

<table>
<thead>
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<th>Components</th>
<th>Methods &amp; Objectives</th>
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| **Entrepreneur (Mr K. Y. Ng)** | In-depth interviews  
• determine personal motivations and expectations  
• personal conceptions of sustainable development / sustainable tourism and its relevance to Coral Cove’s development  
• identification of input of hardware (e.g. construction) plus software (e.g. ideas, knowledge, entrepreneurship) |
| **External Governance** | In-depth interviews, critical analysis of Tourism Development Plans (Indonesia & immediate region e.g. Bintan & Batam)  
• governmental support for island tourism development  
• level of involvement and legitimacy provision  
• ascertain what role the development of an eco-resort fits in with the larger developmental guidelines that are in place for the Riau region and the country |
| **Security Forces** | In-depth interviews & information from Mr. Ng  
• determine island’s security (actual & perceived) |
| **Physical Environment** | Descriptive analysis of physical changes (e.g. changes in island morphodynamics & sedimentological makeup)  
• understanding the island geography and the resultant changes due to infrastructural developments or natural changes  
Seawater quality analysis  
• changes in bacteria content in seawater due to sewage discharges (human health and pollution) |
| **Local Staff (Indonesian)** | Interviews & Participant Observations  
• present a picture of daily operations  
• highlight relationships with visitors  
• illuminate the role of staff in perpetuating a resort’s philosophy |
| **Neighbour Island Communities** | Participant Observations (Island trips, donation of clothing)  
• relation between island communities and visitors  
• impact of ‘tourist gaze’  
• possible economic impacts (buying of fish, employment opportunities) |
| **Tourists** | Surveys, Informal Interviews, Guests’ Book & Participant Observation  
• profile visitors & identify Pulau Segayang’s unique tourism product  
• ascertain consumer demand for more sustainable forms of island tourism  
• understand perceptions and attitudes towards sustainability |
| **Dive & Fishing Operators** | In-depth interviews  
• ascertain tourism products  
• highlight management and conduct of nature-based activities  
• understand personal philosophies regarding sustainability and tourism |
Initial Data & Observations

Foreign Entrepreneur

Mr Ng is a Singaporean who manages Coral Cove Resort. His initial plan was to operate a small retirement island whereby he could conduct community-based projects. He was impressed with the natural charm and the seclusion such an island environment provides, and thus decided to run a small business that will allow him not only to continue his community-based projects but also to provide guests with a rustic and nature-based experience, one that starkly contrasts with the urban city of Singapore. He thus brings to the development of Pulau Segayang a combination of entrepreneurial drive and community spirit.

Mr Ng has contributed not only financially in the development of the resort but has adopted a hands-on approach in every step of the construction, operation and management of the island resort and its associated activities. His level of involvement includes staff management, over-seeing technical and construction developments, cooking lessons (for example, teaching kitchen staff how to prepare sashimi, or fresh raw fish for the guests - usually fish that has been caught by guests themselves or the staff), guest relations, marketing, developing social and economic ties with dive and fishing operators, organising group travel logistics, purchasing of supplies and even conducting activity clinics for guests such as snorkelling, fishing and donation drives for neighbouring island fishing villages.

Mr Ng’s entrepreneurial vision mirrors the Indonesian Government’s current drive to lease out islands for tourism ventures – albeit the difference being that the government’s focus is on developing luxury, high-end resorts (Osman 2006) whilst Mr Ng’s personal venture has focused on giving guests a nature-based experience. Mr Ng’s personal philosophy steered him in developing this commercial venture that has a touch of civic consciousness. Through the interaction and reciprocal relationships he developed with staff and neighbouring island villages, Mr Ng hopes to tie the various island communities and the economic aspect of resort management and operation together. This personal drive and community involvement will be dwelled into in more detail below.
External Governance

Islands in Indonesia are under the portfolio of the Ministry of Marine Affairs and Fisheries (*Departemen Kelautan dan Perikanan* – DKP), and specifically within the Directorate General of Coastal and Small Islands Affairs (Department of Marine Affairs and Fisheries 2006). In Batam, the agency that is responsible for promoting and developing the islands in the Barelang region (to which Pulau Segayang belongs to) is BIDA (Batam Industrial Development Authority). The Barelang region is linked by the Barelang Highway (see Figure 1), and is derived from abbreviating the names of the larger islands that are linked through the highway – namely Batam, Rempang and Galang (BIDA 2006).

Together, these agencies form the governmental bodies that through their developmental policies or governing visions might affect the overall tourism development process that Pulau Segayang adopts. It needs to be qualified here that external governance refers to the fact that the political government of islands usually occurs away and at a distance from island environments due to the islands’ peripheral nature; and thus are ineffectual in refuting or challenging any policy decisions that might affect the islands’ well-being (Hall and Boyd 2005). Recognising this, a well-established and mutually respectful relationship needs to be developed between relevant governmental agencies and the commercial enterprise of Coral Cove Resort to ensure that each others’ interests are protected. Coral Cove Resort has since established contacts with various key governmental officials, who are keen to lend their support for this small enterprise.

Security Forces

The Indonesian Navy (known as *Angkatan Laut Republik Indonesia* - ALRI) patrols Pulau Segayang regularly, particularly when guests are staying at the resort. When guests arrive for the weekend, the Navy patrol speedboat can constantly be seen around the island, and the Navy guards sometimes berth their boat on Pulau Segayang’s jetty and come inland for a reciprocal meal and coffee. The Navy’s patrol guards provide security against piracy, theft, and any illegal activities, ensure general well-being and establishes legitimacy and support of the Navy to this private establishment. This is especially important on an island environment whereby the
mainland is an hour’s boat ride away, whilst the next nearest clinic is on Pulau Petong (a half hour boat ride from Pulau Segayang) which houses only basic and rudimentary medical capabilities. Thus, the Navy not only offers protection but also signifies the official support given to the resort and its activities.

**Physical Environment & Structural Developments**

Infrastructural developments on Pulau Segayang began in April 2004. These changes include the building of a 320m long jetty with two traditional *kelong* nets, ten rooms on the jetty, plus a dinning or common gathering area, and kitchen area that is linked to the jetty and built over mangroves on the southern portion of the island. Additionally, three single-storey chalet buildings, each housing four rooms, were built parallel to the shoreline – two of which are currently used as guests’ rooms, whilst one of the buildings is used as staff quarters and a storage unit. A separate wooden hut was also built inland for the staff. Aside from the provision of accommodation, four freshwater wells have been constructed to provide cooking, bathing and toilet water. Three diesel generators provides energy – in terms of lighting, heated water and air-conditioning – and is usually only turned on when guests arrive during the weekend. The generators operate on half power during the day when lights and hot water are not necessary and guests are usually not in their rooms, but are turned on at full power at night.

At present, all developments have taken place only along a small section of the southern portion of Pulau Segayang (see Figure 2). Tropical rainforest adorn more than half the island, whilst lush mangroves cover a large portion of the rest of the island’s coastline and there are no current plans to change that, aside from the possibility of building a walking track to provide guests with easy access to a tropical rainforest nature trail. Thus, all developments have been localised on only a small portion out of the entire island and has also been conducted on a small-scale manner.

**Local Indonesian Staff**

There are currently a total of 15 Indonesian islanders employed for Coral Cove Resort. Coral Cove Resort’s staff were mostly recruited from neighbouring island communities, and employment conditions require them to stay on Pulau Segayang,
but allows them to return home to their own islands once a month. The difference between working on Pulau Segayang and working on mainland (e.g. Batam) is that on Pulau Segayang the staff are fully covered for board and food. Their savings thus may amount to 90% of their total pay as they do not have to invest in accommodation, transport or food as they would have to if they are working on mainland. The other difference is the requirement to live on the island, away from mainland. Thus, Coral Cove Resort’s policy of employing islanders not only ensures that the staff are used to the quiet life of living on an isolated island but also allows them to make significant savings on their monthly pay.

The staff are currently divided into two groups. One group belongs to the kelong and is responsible for the upkeep of the kelong, daily fishing operations and helping the fishing tour groups with fishing on the kelong or taking the groups out for a fishing boat trip; whilst the other group takes care of the management and operation of the resort (inclusive of room housekeeping, kitchen and restaurant management, plus general maintenance). There is a segregation of responsibilities and level of involvement with the operations of the resort and interaction with guests.

**Neighbour Island Communities**

There is presently a scheme set up by the resort to encourage guests to donate old clothing to the surrounding islands’ fishing village communities in exchange for a trip to visit these fishing villages. For example, if guests bring a minimum of two pieces of old clothing or toys for donation, they will be entitled for a free boat ride to Pulau Petong to visit the village. Aside from the donation drive, the resort frequently buys fish and coconuts from the island fishers at Pulau Petong and is also considering employing some of the fishers to sell their catch to the resort on a regular basis. The local fishermen are also hired to bring fishing guests out to the best fishing spots in the region.

**Tourists**

At present dive and fishing groups make weekly trips to Pulau Segayang for a weekend holiday (Friday to Sunday). Group size range from 20 – 30, and these groups are brought in by either the in-house dive operator or through recommendations from
fishing operators or travel agents, based in Singapore. Alternatively, independent guests may choose to book their trips online through Coral Cove’s homepage (www.coralcove.com.sg).

A pilot test survey was carried out on a weekend trip in April (14th – 16th April). The number of guests that weekend was 25, and split between both dive and fishing groups. The pilot survey yielded 13 returned surveys (52% of guests that weekend). The pilot survey was non-representative of the dive group as the 10 guests returned a day earlier. The survey conducted (repeat surveys will be undertaken over the next few months as well) was designed to elucidate the presence of consumer demand for more sustainable forms of island tourism; the identification of Coral Cove’s unique tourism product; and to determine if the overall island experience, or being in close touch with nature, has any influence on the attitudes and perceptions of visitors towards an island’s sustainable future.

**Discussion**

*Regional Influences*

Indonesia is an archipelago that is made up of thousand of islands. From these thousands of islands, Bintan, Batam and Bali are, amongst others, prominent in their focus on tourism development. Bintan’s tourism development gained political and economic mileage when the Singapore-Johore-Riau (SIJORI) growth triangle model enhanced cooperation between Singapore and Indonesia to develop an integrated resort development project in Bintan (Wong 2003). The integrated resort development project is characterised by a planned environment with specific purposes over a large area, investment opportunities, the sharing of amenities and facilities by different resorts, plus development planning that is sensitive to environmental impacts and changes (Inskeep and Kallenberger 1992; Wong 2003). Alternatively, Bali has been promoted as an exotic land with unique traditional cultures, whose defining characteristic is its Hinduism roots that is distinctive from the rest of Muslim Indonesia (Knight et al. 1997). In contrast, even though the Growth Triangle of Singapore, Johore and the Riau Islands have advocated tourism as an avenue for economic growth and development (Kerr 1991; Mahendra et al. 1997), Batam’s
leisure industry has not received as much attention and governmental and financial support as that given to their manufacturing sector (Royle 1997).

In summary, Bintan’s tourism development is exemplified by the cooperative of government and private enterprises in developing amenities and facilities within a specific and delimited area; Bali’s tourism development vision depends on the promotion of its unique and definable cultural expressions; and finally, Batam’s tourism development has seen a slower pace of evolution. These regional developments of other Indonesian islands have implications for the island tourism model that is taking place on Pulau Segayang.

Firstly, the variety in tourism development visions allows a different tourism model to thrive. In stark contrast to external governmental development plans or large, capital-intensive investment cooperatives with other countries, Coral Cove’s philosophy strives on developing personal relationships – between guests, staff, local communities and governmental personnel. It is a model not meant for large corporate establishments, but for the personal entrepreneur who in his commercial dealings is able to touch local lives. Thus, even though Coral Cove’s development plans may not tie in with the luxury model that the present Indonesian Government has for its numerous uninhabited islands (Osman 2006), it offers an alternative model for personalised enterprise, a product suitable for a wider range of guests, employment and social opportunities for local communities and an experience with nature that will hopefully be etched in memory (K. Y. Ng 2006, personal communication).

Secondly, size is a factor that must be acknowledged. Pulau Segayang is by far a much smaller island in comparison to Batam, Bintan and Bali. Yet the importance of its contribution is simply because of the fact that the large proportion of islands in Indonesia, specifically in the Riau province, is made up of such small islands which have the potential to embrace a low-key, personal, business model that may be of benefit not only to the enterprise, but also to external visitors and will also boost social and financial relations with other small island fishing villages. Thirdly, it must be noted that Batam’s economic future is in some way linked to Singapore both in terms of physical proximity and positive economic relationships (Royle 1997). In the
same stream, the bulk of Coral Cove Resort’s visitor base comes from and is marketed to Singapore, and thus the regional implications and or political intricacies between Singapore and Batam will have its impacts felt on Pulau Segayang.

Therefore the regional influence of other Indonesian islands and Singapore are external players in the tourism development of Pulau Segayang, and by inference any other island that may be chanced upon for the same development process. Pulau Segayang’s tourism development thus showcases the viability of small-scale, community-focused and nature-based island tourism development in lieu of the larger tourism development ideals of the external governments.

*Management Approaches & Philosophies*

Coral Cove Resort internalises the philosophy of returning to and respecting nature. The resort aims to implement as little physical changes as possible to the environmental conditions on the island. This is not to state that there will be no environmental impacts. Rather, that decisions made are done with preserving the physical characteristics of the island as it is recognised that the pristine state of the island is a tourism attraction in itself. For example, dead coconut trees are currently being cut down as a form of building supplies. Whilst the removal of dead trees not only enhances the aesthetic appeal of the ‘natural’ environmental conditions of the island, this process also makes use of a locally available resource. Economically it is a much more competitive option than buying and importing wood from the mainland.

In other words, a sustainable model is one that engages not only the environmental aspects of island development, but also takes into account the financial viability of management approaches. It will be unrealistic to expect a profit-focused enterprise to be concerned only on the environmental conditions of the island when financial gains should be at the front of their minds. Thus, it is through looking at development from a holistic viewpoint that a commercial enterprise may be able to adopt the principles of sustainable island tourism development more effectively.

Additionally, the resort presents an opportunity for guests to engage in nature-based activities and to bring home memories of participating in new and challenging endeavours. Activities such as fishing from a *kelong*, watching the raising of *kelong*
fishing nets at night, eating live squid or raw seafood, swimming in an almost deserted beach, sleeping amongst the mangroves, overnight fishing, or round island snorkelling are just some of the unique activities that may be experienced on Pulau Segayang. The underlying motive for getting guests engaged in a whirlwind of activities is to cultivate in guests fond memories of a unique, nature-based experience that they will bring home, and hopefully market the island on behalf of the resort through word of mouth recommendations. Additionally, this nature-based experience seeks to cultivate in guests a sense of appreciation for the natural environment.

A last point to note is the personal nature of the development progress that Coral Cove Resort has undertaken. Instead of focusing on the resort development on Pulau Segayang exclusively, Coral Cove Resort has adopted an embracing arm into helping out surrounding island communities as well. For example, donation drives asking guests to donate old clothing or toys are conducted regularly and guests are then brought to one of the Pulau Petong’s fishing villages to see the stark contrast of island life versus Singapore’s urban city. There are plans to extend these donation efforts to other island villages as well.

Other examples of the personal nature in the management of Coral Cove Resort include the employment of local fisher folk as guides for fishing trips, plus the purchases of goods from local village communities for the resort. According to Mr Ng (2006, personal communication), being civic conscious is a very important part of Coral Cove Resort’s relationship with the local community. In this manner, the economic progress of Coral Cove is shared in some form with surrounding islands as well. Beyond financial gains, social relationships are also developed amongst the other island communities as well, which legitimises Coral Cove’s development and status as a recreational and tourism enterprise.

Physical Impacts of Tourism Development

As resort development has focused on only a small portion of Pulau Segayang, the rest of the island has seen little, if any, changes in its physical environment. Apart from the beach used for swimming and snorkelling just adjacent to the resort’s rooms, there are three other isolated beaches throughout the entire island. Yet for the most
part, these beaches have not been utilised by guests. Pulau Segayang Bakau, the smaller adjacent island, has also been left untouched, and whilst the island was acquired along with Pulau Segayang, there are no development plans for the island but to leave it as it is. In addition, Coral Cove Resort handles groups of around 20 – 30 guests per trip, and each trip usually takes place over the weekend. Thus, the group size of guests is usually small, and there is also a regenerative period (Monday – Thursday) during which only the staff are present on Pulau Segayang.

However, care must then be focused on the southern portion whereby infrastructural changes have been focused. For example, waste and sewage management are of specific concerns for any development within an enclosed island system as the dangers of direct sewage discharge includes the accumulation of pathogenic microorganisms which can cause gastro-intestinal or respiratory illnesses (Rees et al. 2000). Currently, waste water, soapy bathing water and sewage from the kelong rooms goes into a septic drum that has been installed under the rooms. The septic drum allows for the discharge of liquid waste only and holds solid waste which will then be collectively disposed of out in sea. As it stands, the small guests number and the fact that these rooms are only utilised over the weekends allows for the natural processes of assimilation and dispersion that is characteristic of the ocean. Unfortunately, as all businesses go, the propensity for operations to increase in scale and intensity is ever likely, and it would be prudent for the management to take this into account and to start planning at an early stage.

**Social Communities**

Pulau Segayang is unique from other research which focused on elucidating the social impacts of tourism development on island communities (for example, see: Bras and Dahles 1999; Gmelch 2003; Hong 2002; White and Rosales 2003) as there are (and were) no permanent residents living on the island prior to Coral Cove Resort’s development. Instead, what is interesting is the importation of social capital and the resultant relationships developed not only between the staff (local Indonesian) and guests, but also the staff and the island environment of Pulau Segayang itself. Most of the staff were employed from surrounding island villages. Social relations play out in this arena as staff recommend fellow villages and friends. For example, one of the
female employees is the daughter of Jala, who sold the island to Coral Cove Resort. After-sales relationship between the Singapore-managed resort and the local Indonesian islander villages has been positively developed since. This reciprocal employment showcases the positive social relationships that have been cultivated, despite Pulau Segayang being turned exclusively into a tourism island, compared to the other islands (e.g. Pulau Petong) whereby communities there are not commercial but are residents.

**Conclusion**

Has the research undertaken conclusively shown that island tourism development has taken place in tandem to the principles of sustainable development? At this juncture, the answer to the Research Question may involve various perspectives and judgements. The fact that research is still on-going is one consideration. Ultimately, it must be acknowledged that laying a definitive judgement of sustainability is impossible, and not very useful. Physical and human-social environments are constantly evolving and dynamically responding to internal and external forces, and the inevitable passage of time. There may be little value in determining a particular state of sustainability. Certainly, even the identification of interacting components and their linkages is not exhaustive in this research, and may never be due to constraints such as imperfect knowledge, intricate and complex physical systems, or logistical and financial concerns.

Rather, what is of importance is the identification of approaches, practices, management philosophy and personal internalization of all parties involved that forward the journey of ensuring ecological integrity, economic vibrancy and social cohesion. This research has attempted to achieve that and will continue to do so to highlight, scrutinize and understand how different interacting components of an island tourism system come together and affect each other’s sustainability, or each other’s successful and continual perpetuation. Further research will continue to understand the changes that are taking place and will hopefully elucidate the ability of Coral Cove Resort to become a model of island tourism development for other small islands in the Riau province.
References


Understanding behavior and perceptions of fishers and diving operators in Sekisei Lagoon, in the south of Okinawa, through a project under Japan's Law for the Promotion of Nature Restoration

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Under the Law for the Promotion of Nature Restoration in Japan enacted in 2003, a project started for sustainable use of Sekisei Lagoon, a lagoon located between Iriomote and Ishigaki Islands in the southern part of Okinawa. This project was the first one under this Law that addresses coral reef environment. The project consists of a series of public consultations for producing an action plan and field studies including biology and oceanography as well as human dimensions of stakeholders. As a part of this project, we commenced a study on behavior, perceptions and preference to management measures of important stakeholders. We started with fishers and diving shop operators as these groups are formally organized. The results of semi-structured interviews showed that fishers and diving operators perceive decline in quality of environment as well as decrease in fisheries resources. There are potential conflicts between different user groups and communication is lacking among them. There is very limited information especially on less organized user groups such as marine-based tourism operators including sea-kayaking guides and snorkeling guides, recreational fishers and private boat owners. There may be severer conflicts when the number of tourists increases from current 700 thousand per annum when the proposed construction of new airport is completed in 2013. There are a great gap between what we need to know for a better management and what we know about stakeholders. This study is an epoch for coral reef management in Japan, where management is not always based on field studies and where few researches address multi-sectors such as fisheries, tourism and environment are financed.

I. Sekisei Lagoon and Nature Restoration

1. Sekisei Lagoon

Sekisei Lagoon is the largest coral reef complex in Japan and is located between Ishigaki and Iriomote Islands in the Yaeyama Islands, the southernmost islands of Okinawa (Figure 1). Ishigaki Island is under jurisdiction of Ishigaki City, while Iriomote Island and other smaller islands located in Sekisei Lagoon are under the rule of Taketomi Town. The reef stretches
15km from north to south and 20km from west to east. While most of coral reefs of Okinawa are categorized as fringing reefs, Sekisei Lagoon is unique to be barrier reefs (Ministry of Environment 2004). The biodiversity of the lagoon is high despite its comparatively high latitude due to the Kuroshio-Current running from south to north on the west of these islands. Three-hundred sixty-three species of hard corals have been recorded from this area, showing high diversity compared with 414 species in the Philippines and 330 species in the Great Barrier Reef of Australia in a low latitude. Located upstream of the Kuroshio, Sekisei Lagoon is considered to be source areas of larvae of corals and other organisms and, therefore, is of high priority for conservation (Ministry of Environment 2005).

Sekisei Lagoon has supported subsistent fisheries of island people for centuries and for fishers who comparatively recently immigrated to this area from mainland of Okinawa in the 1880s. These fishers introduced modern fishing technology and have been engaged in commercial fishing. Currently, 385 fishers conform a fishermen’s cooperative. Total catch is 1,904 tons equivalent to 1,140 million yen in 2002, contributing to the local economy by 3% (Okinawa Prefecture 2005).

Sekisei Lagoon also supports fast-growing tourism in the area. In 2005, 740,000 people visit this area and contribution of tourism is large. A survey resulted that a 35% of visitors come to this area to enjoy marine-based activities and a 19% of visitors actually enjoyed diving in 2003 (JTB 2003). Today about 100 diving shops exist in this area. Tourism earned as much as 44 billion yen in 2002 and the economic value of Sekisei Lagoon is extremely large (Okinawa Pref. 2005).

2. Designation of National Park and Marine Parks
The Sekisei Lagoon was designated as one of the National Parks of Japan in 1972 under the Natural Park Law, when Okinawa was returned to Japan. At the same time, 4 Marine Parks were also designated within the National Park (Fig. 1). Moreover, a small bay, Sakiyama-wan, was set aside as a Nature Conservation Area under the Nature Conservation Law in 1983 and two small bays, Kabira-wan and a part of Nagura-wan, were designated as Fisheries Conservation Waters under Okinawa Fisheries Regulations. These tools were chosen with expectation to conserve ecosystems, scenic beauty and fisheries resources.
Fig. 1. Map showing Sekisei Lagoon.
3. Ecological Status of Sekisei Lagoon

Despite the tools, coral reefs of Sekisei Lagoon have experienced severe degradation so far. In the 1970s, live coral coverage of a large part of reefs decreased by outbreaks of Crown-of-thorns starfish (*Acanthaster planci*: COTS). At the same time, after Okinawa returned to Japan, drastic economic development started and many so-called land improvement projects were conducted based on the standards of temperate mainland of Japan. This led severe soil-runoff in tropical Okinawa due to heavy rainfall. Soil particles and sediment killed corals near the river mouths. Because of COTS and soil runoff, not only coverage of live coral decreased but also species composition changed. This was because susceptibility of corals to COTS and sedimentation varied among species. In the 1990s coral coverage recovered until mass mortality in 1998 when large proportion of corals died due to severe bleaching triggered by high water temperature.

Fishery production in terms of total catch and CPUE (catch per unit of effort) for commercially important species has been decreasing during the last 2 decades, suggesting decline in population of important species.

Today, fishers and those who are interested in Sekisei Lagoon share a belief that the quality of ecosystems and fishery resources of Sekisei Lagoon has declined. Ministry of Environment, observing that the National Park and MPAs have not been successfully effective for conservation of ecosystems, points out that the MPAs are too small (2.1km² in total for four MPAs in 130 km² of Sekisei Lagoon) and that regulations for extractive activities are too weak (Ministry of Environment (2005)). Fishing including nighttime spearfishing under SCUBA and hooker by cooperative members is allowed in Sekisei Lagoon including National Park and MPAs, while other destructive fishing methods such as blast fishing and use of poison are strictly banned. There is no effective legislation to avoid soil runoff into coral reefs except for the Act for Prevention of Red Soil Runoff. This Act has effectively reduced soil runoff from development works. However, the Act has no power on soil runoff from existing farms, which is now believed to be the major source of sedimentation. There was no effective system to encourage collaboration among multiple sectors and different level of government agencies (Nation-Prefecture-City/Town) to address the problem.

It is widely understood that effective countermeasures have to be taken to conserve valuable ecosystems of Sekisei Lagoon and that multisectoral approach is essential. Enactment of the Law of Nature Restoration seems very timely when the number of people who are interested in conservation of ecosystems and sustainable resource use of Sekisei Lagoon is increasing.
4. The Law for the Promotion of Nature Restoration in Japan
The law for Promotion of Nature Restoration was passed in December 2002 and enacted January 2003. The purpose of the law is to (1) establish the basic principles of nature restoration, (2) defines the responsibilities of effecters, and (3) stipulates necessary matters for the implementation of nature restoration, including the establishment of the Basic Policy for Nature Restoration. These are done to pursue the comprehensive implementation of measures of nature restoration, to secure biodiversity, to support the efforts towards realizing a society in harmony with nature, and to contribute to conservation of the global environment.

The competent ministers in this law are the Minister of the Environment, the Minister of Agriculture, Forestry and Fisheries, and the Minister of Land, Infrastructure and Transport.

Basic principles of nature restoration stipulate that nature restoration should be carried out:
(1) to maintain a sound and bountiful natural environment to future generation, to realize a society in harmony with nature through the protection of biodiversity and contributing to the conservation of the global environment,
(2) with the participation and cooperation of various actors in the community, including governmental agencies, local governments, local residents, NGOs and those with special knowledge on the natural environment, in voluntary and transparent manner,
(3) based on scientific knowledge,
(4) implementing in adaptive manner even after commencement of the project, based on monitoring, adaptive manner.
(5) using the nature restoration projects for learning of natural environment.

For administering a nature restoration project, a “nature restoration committee” is formed by “effectors”, parties such as NPO, local government and government agencies who intend to undertake a nature restoration project. The committee consists of such effectors, local residents, landowners, experts and other interested individuals. The committee draws up the overall plan for nature restoration in line with the Basic Policy for Nature Restoration, discusses the drafted implementation plan and conducts communication and coordination for implementation of the project. The law stipulates that the national and local governments will make efforts to take the necessary measures, financial and otherwise, to implement nature restoration.
Since the enactment of the law in 2002, 17 projects were started all over Japan. For preparation of the establishment of the nature restoration committee of Sekisei Lagoon, a series of biological and oceanographic studies were conducted between 2002 and 2004. The findings from the studies resulted in the “Master Plan for Nature Restoration of Sekisei Lagoon” published by the Ministry of Environment in 2005. Based on the Master Plan, the Nature Restoration Committee for Sekisei Lagoon was established, as the 18th committee in Japan, in February 2006.

5. Nature Restoration Committee for Sekisei Lagoon
The Ministry of Environment, the Prefecture Government and Okinawa General Bureau of the Cabinet Office formed a group of the effectors for the Nature Restoration Project and called for establishing the Nature Restoration Committee for Sekisei Lagoon. The 3 offices jointly advertised for people who want to participate in the committee for a period of 1 month after 27 December 2005. The conditions for application were individuals and organizations who are interested in nature restoration of Sekisei Lagoon, including:

- fishers and fishing cooperatives who intend to conduct sustainable fishing,
- researchers and those who conduct reef monitoring, studies and COTS control,
- farmers and farmer organization who intend to conduct low impact farming,
- individuals and organizations who intend to reduce environmental impacts
- individuals and organizations who intend to develop or implement education program for conservation

All the applicants were approved to be committee members, including 32 individuals, 30 organizations, 20 local government agencies and 7 national government agencies. None of the committee members is paid to participate.

In the first committee was held in 27 February 2006, where the outlines of the projects were explained by effectors, a chairman and a co-chairman were chosen and the ways in which committee is run was discussed.

The processes of the project will be as follows:

- A general plan will be drafted by core members of the committee.
- Sub-committee will be established within the committee to address specific issues.
- After the general plan is approved in the committee, action plans will be formulated by each effector.
- Action plans will be discussed in the committee
- Action plans will be implemented and monitored and evaluated

Throughout the process, a series of biological, oceanographic and socio-economic studies
will be conducted to input scientific knowledge into the committee. Moreover, a group of experts provides technical assistance and advice to the committee. This paper deals with a study conducted to contribute to the process of nature restoration of Sekisei Lagoon.

II. Stakeholder Study

1. Objectives
As Sekisei Lagoon is the largest and possibly the most healthy coral reef system in Japan, there have been many studies conducted in the fields of biology, ecology and chemical and physical oceanography. On the other hand, comparatively limited number of studies were conducted in the field of social sciences. However, it is increasingly accepted that the relationship between the environment/natural resources and users/society have to be well understood for a better management. This is critical to achieve a balance between development and conservation.

Fisheries and tourism including diving operation are two of the most important industries in this area and both industries obtain benefit from the coral reef ecosystems and could give irreversible impacts onto the ecosystem on which they themselves depend. Moreover, fishers and diving operators are well organized user groups of coral reef resources and therefore are groups researcher can access with little difficulties. Therefore, as a pioneer work to understand the user groups, this study targets fishers and diving operators. This study intends to clarify their temporal and spatial use patterns, perceptions to the changes in environment and resources, their belief in why such change occurred and their opinions on future appropriate management.

2. Methods
Study was conducted between September 2005 and March 2006. First I contacted key informants such as the president of fishery cooperative and the president of the association of diving shops. Lists of potential informants were provided by those people. I interviewed 14 fishers and 8 managers of diving operators by using semi-structured interview method and asked questions in relation to:

- temporal and spatial distribution of resource use
- years of experience of fishing or diving operation
- perceived changes in environment and resources
- belief in why such change occurred
- opinions on future appropriate management.
3. Results

According to preliminary interviews with government agencies and relevant organizations, a variety of stakeholders was identified (Fig. 2). In Fig. 2, a variety of stakeholders were plotted on a coordinate where X axis represents a spectrum, on one side of which those who make impact on the environment and others’ activities are located, and on the other extreme of which those who suffer from impacts by others’ activities are located. The Y axis represents a dimension from inland to offshore. Those whose activities are terrestrial such as farmers are also related to coral reefs by making impacts through letting the top soil of their farmland flow into the reefs when they take inappropriate farming method. The figure also shows that some stakeholders both make impacts on others and suffer from impacts made by others. For example, while fishers catch fish leading decline in fish density of fish that divers wish to observe, fishers suffer from activities of divers who chase after fish and make the fish more difficult to catch by fishers. On the other hand, the figure suggests that potentially conflicting users such as fishers and diving operators may have common interest such as maintaining water quality of coral reefs from terrestrial pollutants.

3-1. Fishers

Fishers in this area have adopted a high variety of fishing methods in coral reefs including day and night diving with and without hooker and SCUBA, collecting shellfish, sea urchins and algae (especially Cladosiphon (mozuku)), gill net, set net, fish trap, hook and line (Fig. 3). These days, aquaculture of fish (groupers), algae (Cladosiphon and Caulerpa (seagrapes)) and prawn (Penaeus japonicus) is carried out in this area. Some
fishers are involved in tourism in ways in which fishers take tourists to bottom linefishing, to fish aggregation devises (FADs) for trolling, to snorkeling and to SCUBA diving. This is called “tourism fishing” in this area. Few fishers are engaged in a single fishing method. Rather, it is common that a fisher is engaged in combination of various types of fishing methods.

Most of those fishers I interviewed mentioned degradation of water quality due to red soil runoff, waste water from stockbreeding and households. Many worried about damage caused by overnight anchoring by an increasing number of cargo ships in Sekisei Lagoon. Regarding the decrease in fish resources, several fishers criticize lack of controlling nighttime spearfishing though this is legitimate fishing for cooperative members in this area. The number of fishers is decreasing because many give up continuing fishing due to decline in catch and the value of fish. Fishers may be seeing that the future of fisheries in this area is not promising. Many fishers expects: (1) alternative types of fishing including FADs and aquaculture, (2) adding value to the product, (3) introduction of more effective resource management that covers recreational fishers, (4) promotion of tourism fishing, (5) reducing impacts on environment through countermeasures to soil runoff and waste waters, (6) protection of natural beaches and estuaries, (7) taking countermeasures to new threats such as cargo boat anchoring.
Some have complains against diving industry for their inappropriate way of placing anchoring ropes but conflicts are less notable compared with other areas in Okinawa.

3-2. Diving operators
Diving industry is still growing (Fig. 4). There are Managers of diving shops are concerned with decline in water quality due to terrestrial runoff, pollutant and eutrophication by high level of nutrient from land. Some operators mentioned that underwater landscape changed from coral assemblages to algal bed in some parts of Sekisei Lagoon. From the view points of diving operators, there are no severe conflicts with other user groups such as fishers.

4. Discussion and recommendation
Socioeconomic studies for the conservation of coastal environment have just started. There is still large gap between our knowledge and what we need to know more, for a better management. At the moment, there are no apparent conflicts among user groups. However, if the construction of the airport and other related infrastructure causes negative impacts on surrounding coral reef ecosystems, resulting in the degradation of resources, there will be harsher conflicts for limited resources. When the construction of the new airport is completed, the increased number of visitors are highly likely to affect use pattern of tourism operators, including the tourism fisheries, and potentially leads to conflicts.
The following recommendations may be useful for future management of Sekisei Lagoon.

1) Reduction of environmental load from land
   - Problems of soil runoff started 3 decades ago but still are the issues. Recent development of stockbreeding industry in Yaeyama may have impact on ecosystems quality by increasing nutrient level of surrounding waters. Impacts of eutrophication on ecosystem have not been well studied and should be encouraged. Moreover, introduction of effective countermeasure based on natural and social scientific research is urgent.

2) Reduction of environmental load in the sea
   - Reduce fishing pressure by introducing FADs and aquaculture with low environment impact
   - Introduction of effective resources management such as closure of fishing during breeding seasons
   - Introduction of effective MPAs

3) Enhance communication among stakeholders
   - Dialogue among different sectors of government, among different levels of government and among different user groups is to be encouraged. The newly established Committee of Sekisei Lagoon Nature Restoration is expected to be such opportunity.

4) Encouraging socio-economic studies on stakeholders
   - Compared with inputs for bio-physical studies on coral reefs, little budget has been allocated to studies on human dimensions of stakeholders. Socio-economic studies should be encouraged. Decision making should be based on results from such studies.

This study is not a goal of understanding of stakeholders but is just a starting point. A large study field is waiting for researchers to tackle. The following researches should follow the current study:

- Studies on recreational fishers and private boat owners – Although recreational fishers outnumber cooperative members but the use pattern, attitudes or values have not been studied. It is urgent to understand their resource use patterns.
- Studies on less organized user groups of coral reefs, including operators of eco-tourism, kayak and snorkel,
- Follow-up studies on fishers and diving operators are essential for validation of findings of this study.
- Tourism is the most fast growing and important industry in Yaeyama area. However,
few studies have been done on the relationship between tourists and natural environment that is an important attractor for the visitors. Moreover, for achieving better management of coral reef environment and resources, closer communication between stakeholders, especially between managers and researchers, is essential.

References
Japan Tourist Bureau 2003, Studies on the effect of tourist resorts in the Yaeyama area (in Japanese)
Mosquitoes collected on Yap Islands and Ulithi Atoll, Yap State, Federated States of Micronesia (Diptera: Culicidae)

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Abstract: Mosquito larval surveys were carried out on Yap Islands. Larvae were collected from 60 natural and artificial habitats. A total of 723 larvae belonging to 10 species including two unidentified species were collected. Among them, *Aedes hensilli* was the most predominant species collected (70.0%) followed by *Ae. maehleri* (13.4%), *Ae. lamelliferus* (8.4%) and *Culex quinquefasciatus* (4.8%). The same surveys were also carried out at 56 larval habitats on four inhabited islands of Ulithi Atoll (Mogmog, Falarop, Asor and Fassarai). A total of 658 larvae were collected from 56 habitats on the islands. Two mosquito species, *Ae. hensilli* (71.9%) and *Cx. quiquefasciatus* (28.1%) were collected from 51 and 9 habitats, respectively. Since *Ae. aegypti* and *Ae. albopictus* were not collected in the present survey, *Ae. hensilli* may be implicated as a putative dengue vector in case of an outbreak. Two species, *Cx. annulirostris* and *Ae. lamelliferus* were newly recorded species from Yap Islands.

Key words: *Aedes hensilli*, mosquito fauna, Yap, Ulithi Atoll, Federated States of Micronesia

INTRODUCTION

It is a well-known fact that major vectors for dengue fever and dengue haemorrhagic fever are *Aedes aegypti* and *Ae. albopictus* in urban areas of Southeast Asia and in the Western Pacific Region (WHO, 1995).

Savage et al. (1998) reported a dengue fever/dengue haemorrhagic fever outbreak in Yap State between June and July 1995 caused by dengue-type 4 virus. And, entomological investigations implicated the native mosquito species, *Ae. hensilli* as a previously unrecognized epidemic vector of dengue viruses.

An interdisciplinary research team composed of 30 researchers and students from various faculties of Kagoshima University visited Yap Islands and Ulithi Atoll of Yap State using the training ship of the university. The expedition was aimed at: (1) looking at geological, ecological, bioproductive, hygienic and socio-cultural features of natural and human environments, and (2) in some way contributing to the development of agriculture, fisheries and the actual daily lives of the people of Yap, as well as promoting international exchange between the State of Yap and Japan. This report describes a brief survey of mosquito fauna and breeding sites of mosquitoes in Yap Islands and Ulithi Atoll, Yap State, Federated States of Micronesia.

MATERIALS AND METHODS
Yap Islands consists of the four tightly clustered islands of Yap, Tomil-Gagil, Map and Rumung. All but Rumung are connected by bridges. The islands are 829 km south-west of Guam. Yap Islands has 100 km$^2$ of land. The interior regions are not mountainous, but have gentle rolling hills. The highest point is 174 m. The population is about 7,800. Surveys of larval mosquitoes were carried out in nine municipalities of Yap Islands except Rumung. Ulithi Atoll is 161 km north-east of Yap Islands. There are 49 islands with a total land mass of 4.6 km$^2$. They are mere strands of coral and sand rising precariously above the water. Ulithi’s inhabited islands (Mogmog, Falarop, Asor and Fassarai) have a total population of just over 1,000. Surveys of larval mosquitoes were carried out on four islands. Larval collections were made at 60 habitats in Yap Islands and at 56 habitats in Mogmog (14 habitats), Falarop (11 habitats), Asor (14 habitats) and Fassarai (17 habitats). The habitats are composed of coconut shells, tree holes, small water pools, dam (the source of water supply), and artificial containers such as a concrete water tank, canoes as well as discarded tin cans, plastic, metal and ceramic vessels, drums and tires and the collections were made with a pipet and dipper. Collected larvae were preserved in 70% ethanol, and some larvae were reared to the adult stage, when possible. Identification of the larvae and adults was made by using the keys and descriptions of Bohart (1957) and Bohart and Ingram (1946). And, the classification of the species belonging to the genera Lutzia follows that of Tanaka (2003).

RESULTS

A total of 723 larval mosquitoes belonging to 10 species were collected at 60 various natural and artificial habitats in Yap Islands (Table 1). They are identified as Culex (Culex) annulirostris, Cx. (Cux.) quinquefasciatus, Cx. (Cux.) sitiens, Culex sp., Lutzia (Metalutzia) fuscana (=Cx. (Lutzia) fuscanus Wiedemann) (Tanaka, 2003), Ae. (Skusea) lamelliferus, Ae. (Stegomyia) hensilli, Ae. (Stg.) maehleri, Aedes sp. and Aedeomyia catasticta. Among them, Ae. hensilli was the most predominant species collected (506 larvae, 70.0%, 42 habitats) followed by Ae. maehleri (97 larvae, 13.4%, 15 habitats), Ae. lamelliferus (61 larvae, 8.4%, 8 habitats) and Cx. quinquefasciatus (35 larvae, 4.8%, 2 habitats). The number of the other six species collected Cx. sitiens, Lt. fuscana, Ad. catasticta, Cx. annulirostris, Culex sp. and Aedes sp. was small (24 larvae, 3.3%, 1 or 2 habitats).
On the four islands of Ulithi Atoll, larval collections were made at 56 habitats. Only two mosquito species, *Ae. hensilli* and *Cx. quinquefasciatus*, were collected from various artificial habitats (Table 1). The larvae of *Ae. hensilli* (473 larvae, 71.9%) were collected from 51 habitats and *Cx. quinquefasciatus* (185 larvae, 28.1%) were collected from 9 habitats.

### DISCUSSION

The climate of Yap State is characterized by constant, warm temperatures, heavy rainfall and high humidity. Surface ground water pools are scarce, especially on Uliti Atoll, and the main mosquito habitats are confined to artificial containers. Mosquito fauna of Yap State has attracted little attention in the past. Much of our present knowledge of the mosquito fauna of these islands is owing to the careful and extensive works of Bohart and Ingram (1946) and Bohart (1957) who recorded 11 species. Recently, Savage et al. (1998) recorded nine species including one additional species *Ae. aegypti* in Yap State. Infestations of *Ae. albopictus* were discovered in Yap in 1995 ([CDC information on Ae. albopictus](http://www.cdc.gov/ncidod/dvbid/arbor/albopic_new.htm)). As far as we know, the
known mosquito fauna of Yap State consists of 13 species at present. A single *Culex* sp. larva was collected from a used tire on Yap Islands. Because of its poor condition, it is difficult to identify it but quite apparently it is a distinct form from the recorded species of Yap Islands, *Cx. (Culiciomyia) nigropunctatus* and *Cx. (Lophoceraomyia) gossip*.

Five *Aedes* sp. larvae were collected from a small water pool and a drum on Yap Islands. They represent a species probably related to *Verrallina pipkini* (=*Aedes (Verrallina) pipkini* Bohart) (Reinert, 1999), but it is difficult to identify them in only the larval stage.

*Aedes aegypti* is one of the most efficient mosquito vectors for dengue virus. Dengue outbreaks have also been attributed to *Ae. albopictus*, *Ae. polynesiensis*, and several species of the *Ae. scutellaris* complex (WHO, 1997). Ashford et al. (2003) conducted an investigation to assess the extent of the outbreak of dengue fever in Palau on 1995, and determined the risk factor associated with infection including the presence and abundance of the vector species. Potential vectors included the introduced species, *Ae. aegypti* and *Ae. albopictus*, and the native species *Ae. hensilli*. Savage et al. (1998) investigated the outbreak of dengue fever in Yap State in 1995. The majority of residents (93-100%) on Yap Islands, Woleai and Eauripik were positive for anti-dengue IgG antibodies, indicating widespread exposure to dengue viruses. And, entomological investigations implicated the native mosquito species, *Ae. hensilli*, as vector of dengue viruses. In the present survey, *Ae. hensilli* was the most abundant and widespread member of *Aedes*, and *Ae. aegypti* and *Ae. albopictus* were not collected from Yap Islands and Ulithi Atoll. As stated by Savage et al. (1998), the risk factor analysis in conjunction with data on the distribution and abundance of mosquito species suggests that *Ae. hensilli* was the primary vector in Yap State.

According to recent CDC information on *Ae. albopictus*, which is expanding its distribution in the Pacific region, infestation was discovered in Yap State in 1995. Since this species could not be found in this survey as well as the previous survey by Savage et al. (1998), we believe that *Ae. albopictus* is not a primary vector in Yap State and *Ae. aegypti* seems to be still a minor species in Yap State.

Ten mosquito species were collected at various natural and artificial habitats of Yap Islands in this survey. *Ae. hensilli* was the most abundant mosquito species. In the islands of Ulithi Atoll, *Ae. hensilli* was also an abundant species. *Aedes* larvae are container-breeders growing in both clean and organically rich water in both natural and artificial containers. In the present survey, larvae of *Ae. hensilli* were collected from different kinds of habitats, such as coconut shells, tin cans, tree holes, old tires, plastic water barrels, drums for water, shells and canoes, often together with *Ae. maehleri*, *Ae. lamelliferus* and *Cx. annulirostris*. Most of the habitats are artificial containers discarded around human dwellings. Larvae were not collected from leaf axils of taro and banana. It may be notable that *Cx. annulirostris* was newly recorded in Yap State. This is one of the vectors of Japanese encephalitis as well as *Cx. tritaeniorhynchus* and is implicated in an outbreak of Japanese encephalitis which occurred on Saipan, the Commonwealth of the Northern Mariana Islands, in 1999 (Savage et al., 1993).

Environmental management should focus on the destruction, alteration, disposal or recycling of containers that produce the greater number of adult Aedes mosquitoes. These programmes should be conducted concurrently with health education programmes and communications that encourage community participation in the
planning, execution and evaluation of container-management programmes (e.g. regular household sanitation or clean-up campaigns) (WHO, 1997).

REFERENCES


Edible and medicinal marine plants as resources for rural women’s microenterprise on small islands of the South Pacific

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Introduction

Resource-based economic development on small islands is typically constrained by the limited resource base and in some cases, by the distance from mainlands where supplies can be obtained and products sold. Natural resources of small islands may also be particularly fragile and vulnerable to pollution, habitat destruction and other features typical of human economic development. On small islands of the South Pacific there are further constraints related to traditional cultures, which are inherently communal rather than capitalistic. For women in traditional societies entrepreneurial activity may be particularly constrained owing to the central importance of their domestic roles as caregivers and providers. In this paper I will explore the potential of seaplants, an often underutilised natural resource that is abundant on many small islands, as the basis for culturally and ecologically appropriate entrepreneurship on small islands of the South Pacific. I will argue that, provided there is local support from community, academic or government institutions, this natural resource can be a particularly good fit for local economic development by women in traditional, small island societies.

The paper will first outline the position of seaplants in human cultural traditions, and then explain how this has been reinforced and expanded upon through modern scientific investigation. Opportunities for business development based on seaplant resources will be outlined. Potential benefits in the way of marine resource management, tourism and gender equity will be explored, and the various ecological, training and infrastructure considerations relevant to the South Pacific context will be laid out. The conclusions suggest what community and governmental support will be needed to advance this form of local development.

Material for this paper has been drawn from the literature and from personal experience working in the South Pacific with government, community development and academic institutions. The literature on medicinal applications of seaplants is vast; the review in this paper is not meant to be comprehensive, but illustrative.

Traditional uses of seaplants

Seaplants (also called seaweeds or macroalgae) have been used traditionally in many coastal and island cultures, not only as food but also as medicines, aphrodisiacs, and cultural objects. In the European maritime nations, for example, the marine plant Irish moss (Chondrus crispus), which contains carrageenan gel, has been used historically as folk medicine for sore throats,
cold, flu, bronchitis and other chronic lung conditions. Carrageenan combined with milk, fruit juice or vegetable juice forms a nourishing jelly used in traditional societies as a nourishing and easily-swallowed food for babies, the elderly and the infirm. Large brown seaplants – the kelps and wracks - have been exploited in Europe as sources of iodine, animal feed and soil amendments (Arzel 2006). The tradition of thalassotherapy, including the use of seaweeds in mineral rich baths, continues today in modern spas in Europe; such treatments are said to provide both medicinal and cosmetic benefits.

On Caribbean islands, seaplant extracts are traditionally used to boost male virility and for various medicinal uses (Batista & Connor 1986). In the island of Chiloe in southern Chile, the large brown algae *Durvillea* and *Macrocystis* are used by indigenous Williche people in a variety of therapies, including the mending of broken bones and alleviation of ulcers and hemorrhoids (Novaczek pers. obs.). The ancient provenance of seaplant use in Chile is supported by archeological evidence dating back to the late Pleistocene (Dillehay & Rossen 2002).

In the Pacific region, Japan, Korea and China are widely recognised as seaplant-consuming nations. In the case of China, where at least 74 species are eaten or used as medicine, the written record on seaweed as food goes back more than 2000 years (Xia and Abbott 1987). The regular consumption of seaplants has been named as a dietary factor contributing to the relatively low incidence of breast cancer in Japan (Cann et al.2000, Funahashi et al.2001, Lambe et al.2003, Teas 1981) and there is also a possible link between consumption of seaplants and lowered incidence of HIV/AIDS (Teas et al.2004).

On the Philippines island of Luzon, about 20 different marine algal species serve as human and animal food, medicine, fertilizers and insecticides, while on Mactan and Mindanao Islands, local inhabitants reportedly possess a high level of seaplant knowledge and apply local dialect names to particular species (Lawrence M. Liao, unpublished).

Among the Central and South Pacific Islands, perhaps Hawai‘i has the best documented marine ethnobotanical lore. Abbott and Williamson (1974) brought together traditional knowledge concerning a dozen of the most commonly eaten Hawaiian seaplants. This study also made reference to the use of some species as ceremonial and medicinal plants. *Sargassum*, for example, provided a poultice for open coral cuts, a peace offering for families seeking forgiveness from neighbours, and a symbol of purification. Fortner (1978) produced a more comprehensive account of Hawai‘ian marine ethnobotany. She estimated that local people historically used over 70 seaplants as food and some of these were also used traditionally to treat a range of conditions including blotchy skin, miscarriage, mouth sores, asthma, sprains and indigestion.

Other traditional uses of seaplants as medicines include the prevention or treatment of cancer, arthritis, skin diseases and parasites (Stein & Borden 1984, Fitton 2005a, Trono 1997). Some macroalgae are inedible, some contain anti-
helminthic chemicals and so are used to as worming agents, but none are known to be toxic when consumed in moderation. There are rare accounts of sickness related to consumption of seaplants. In some cases the sickness is due to contamination by epiphytes that produce toxins (Fitton 2005a). In Samoa, where this sometimes occurs, fishers know the reefs where plants may be affected and do not harvest edible *Halymenia* from those specific locations (R. South pers comm.). For safety, as a general rule, seaplant harvesters should not take plants from waters polluted by sewage or industrial effluents.

As will be seen below, the traditional uses of seaplants as medicine are now being examined by researchers who are both confirming some traditional applications and extending knowledge into new areas. As a result, the online medical database Pubmed ([www.pubmed.nl](http://www.pubmed.nl)) includes more than 900 references to peer reviewed publications dealing with seaplants and their extracts.

### Seaplant use on South Pacific Islands

There are perhaps one hundred seaplant species in the South Pacific that may be used either as food or for medicine (Novaczek 2001a,b). Yet in many Pacific Island countries, with the exception of Fiji (South 1993a,b), people have scant knowledge of marine plants as food (Novaczek and Chamberlain 2000) and medicinal applications are even more rare. Even in Fiji where a half dozen species are regularly found in local markets, edible and medicinal marine plants represent a largely underutilised resource. Those most commonly sold in markets are species of *Caulerpa* (*nama*), *Solieria* (*lumi tamana*) and *Gracilaria* (*lumi wawa*). At home, Fijians may also eat *Scinaia*, *Enteromorpha* (*lumi boso*), *Codium* (*totoyava*), *Hypnea* (*lumi vakalolo*) and *Acanthophora* (*lumi karo*). All are harvested from shallow inshore waters, generally by women and children. When sold, they are sold fresh. Of all the wild-harvested species currently marketed in Fiji, there is one, *nama*, that is known to have been over-harvested to the point of commercial extinction in some locations.

In addition to wild native species, there is one exotic marine plant, *Eucheuma*, which is cultivated commercially on a number of Pacific Islands. This plant is grown attached to strings in shallow water then harvested, dried, baled and sold into multinational corporate markets. Carrageenan, a complex carbohydrate extracted from *Eucheuma*, is widely used in industrial scale food processing, pharmaceuticals and cosmetics. Although this plant is edible and medicinal, its value is not recognized locally and so it is not generally used in those coastal communities of Kiribati, Solomon Islands and Fiji where people cultivate it for export (Novaczek & Chamberlain 2000).

### Seaplants for food security

On some Pacific Island atolls, agriculture is so limited that children may rarely eat green vegetables and then are at risk of impaired vision or blindness owing to vitamin A deficiency. On islands where vegetables and fruits are grown
intensively or in poor, sandy soils, they may lack micronutrients that are essential for optimal health. In such situations, edible marine plants could alleviate nutritional deficiencies (Ito & Hori 1989). Seaplants contain useful concentrations of essential amino acids, minerals (e.g. Mg, Ca, P, K, I) and micronutrients such as boron (valuable for brain function), as well as vitamins (Watanabe et al. 1999), free amino acids and omega-3-type fatty acids (Fitton 2005b). Some seaplants are well endowed with antioxidants and complex carbohydrates; others offer reasonable protein and fibre content (Jimenez-Escrig & Cambrodon 1999). Recipes for marketable foods based on South Pacific seaplants have been developed (Novaczek & Athy 2001).

Useful minerals in seaweeds can be transferred into other foods by using the seaweeds as fertilizers for gardens and as feedstock for chickens (Kaufmann et al. 1998) and other domestic animals.

**Seaplants for health care**

*Rural health care in developing countries and Pacific islands*

The World Health Organization estimates that 75-90% of people in developing countries use traditional medicine to meet their primary health care needs (UNESCO 2005). In rural areas of the South Pacific, daily health care is commonly provided by traditional practitioners who offer local herbal remedies, massage and counselling. Most women have sufficient knowledge of herbs to minister to their family’s basic first aid needs. There is a network of herbalists, the Women’s Association for Natural Medicinal Therapy (WAINAMATE) active in the South Pacific, which facilitates the collaboration and sharing of knowledge among traditional healers. The public education materials developed by this network underline the creative energy at work in the region. Looking at the herbal remedies described one cannot help but notice that many of them involve species that are not indigenous to the region, but have been introduced through the history of European colonization of the islands. Local healers have been actively experimenting and discovering the properties of introduced species, and this new knowledge has been widely disseminated within and among islands where, even today, modern communication devices including telephones may be uncommon. Yet, not only women but also many children in rural villages can identify the medicinal uses for a wide array of both native and introduced plants. This speaks eloquently of the power of dissemination of information in traditional societies and is particularly interesting when one considers that knowledge of healing herbs and recipes for healing potions are often closely guarded family secrets.

Women who are responsible for feeding families and those who are traditional healers face new challenges because changing lifestyles and eating habits in the South Pacific are promoting modern lifestyle afflictions such as diabetes, heart disease and obesity. As will be discussed below, modern science indicates that there are common seaplants that can play a role in the prevention and treatment of these conditions. Making this scientific information available to rural health practitioners would be beneficial. They have the intelligence, creativity and
courage to explore how to use locally available seaplants as functional (physiologically active) foods; they also have access to networks such as WAINAMATE through which information can be shared.

There is a broad and growing medical literature concerning the efficacy of various whole seaplants and seaplant extracts in the prevention and treatment of diseases. Most of the work to date has focused on species of red and brown seaplants. The third major group, the green seaplants, has been relatively neglected. Each group has a different suite of physiologically active components. These compounds are often poly potent and effective when taken in the form of a whole plant, rather than as isolated, refined chemicals. Some are pigments, fats or amino acids. Various compounds act as antioxidants, which are believed to have anti-ageing activity (Ruperez et al. 2002, Yan et al. 1998) and to protect the liver from chemical-induced damage (Wong et al. 2000). Some seaplants reduce blood cholesterol in lab rats and so may protect against heart disease in humans (Ara et al. 2002, Murata et al. 1999). Regular consumption of seaplants that are rich in potassium and magnesium can reduce the intensity and cost of treatment for certain categories of high blood pressure (Krotkiewski et al. 1991, Ono et al. 2000). In animal trials, powdered brown seaplants in the diet lowered blood pressure and the risk of strokes (Yamori et al. 1986). Perhaps the most promising compounds for medicinal applications are complex carbohydrates found in cell walls.

Physiologically effective seaplant carbohydrates usually come in a number of different, yet closely related, forms. They are present in various proportions in each different species, and also may vary seasonally in terms of the amount of a given compound present per gram dry weight of seaplant. Some compounds also vary according to whether the plant is male, female or asexual. Whereas the medicinal compounds in land plants tend to be rare secondary metabolites, the medicinal compounds in seaplants are often available in abundance, constituting up to 70% of the plant's dry weight. These medicinal compounds are, in most cases, water soluble and can be easily extracted by soaking the plants in cold or hot water. This means that village herbalists can prescribe whole seaplants in either fresh or dried form, or prepare extracts with nothing more than a pot, clean fresh water and, if necessary, a fire. Where acidic extraction is preferred, this can be accomplished simply by addition of lemon juice to the water.

Although there are increasing numbers of patents being taken out on seaplant extracts for medicinal products, pharmaceutical researchers generally pay scant attention to these potential therapies as they involve consumption of whole plants or extracts that are freely available and therefore difficult to patent, control and turn into profits. Therefore, research into effective doses and therapies may well come predominantly from traditional healers rather than from the industrial scientific establishment.

Long-standing medicinal applications of large brown seaplants (kelps and wracks) include the use of kelp stipes as cervical tents and the use of the kelp and wrack extracts (alginites) in bandages applied to burns and wounds (Stein and
It has long been recognized that alginates are useful for detoxifying the body, acting like cation exchange resins in the intestine, removing heavy metals, dioxin residues & radioactive isotopes (Paskins-Hurlburt et al.1978, Skorya et al.1966, Morita & Nakano 2002). The wracks and kelps provide many complex carbohydrates including fucans, laminine and laminarin. Whole plants appear to have value for cancer prevention (Teas 1983, Yamamoto & Maruyama 1985). Fucans including fucoidan have demonstrated anti-retroviral, anticancer, antithrombin, immune-boosting and anti-ulcer properties (Nishino et al.1999, Shibata et al. 2000, Furusawa & Furusawa 1985, Shan et al. 1999, overview in Fitton 2005b).

Because of their high iodine content, brown seaplants are used in thyroid therapies and are also commonly found in non-prescription weight loss aids. Iodine facilitates weight loss by acting on the thyroid gland, stimulating the metabolism. Excessive iodine can be dangerous (Kim and Kim 2000), but one must consume high doses of seaplants over a long period of time to approach the threshold of harm. Iodine overdose from seaplant consumption is rarely recorded (Fitton 2005a) and its effects are usually reversible.

The red seaplants, like the browns and greens, contain valuable pigments and antioxidants, vitamins, minerals and micronutrients. Some particular families also contain carrageenans and agar, long-chain carbohydrates that have long been used for industrial production of processed foods, drugs and cosmetics. In medicine, agar is a mild laxative and has also been considered but not proven as a potential therapy for jaundice in newborns (Kemper et al.1988).

The carrageenans are extremely useful and polypotent. Carrageenan is currently being tested for efficacy in preventing HIV infections (Population Council 2006.) Animal studies indicate effectiveness against HIV (Feldman et al.1999) as well as other retroviruses including human papilloma virus and herpes (Gonzales et al.1987, Pearce-Pratt R & D.M. Phillips 1996, Pujol et al.2002). These extracts work primarily by providing a physical barrier that prevents the virus from entering cells. Carrageenan as well as certain brown and green seaplant compounds may also attack the retroviruses found within cells (Neushul 1988; Lee et al.1999). Hence there is potential to use them intravaginally for prevention of sexually transmitted infections, and as oral medicine.

Carrageenan also affects lipid metabolism, reducing blood cholesterol levels. It therefore may be useful in prevention of heart disease. Carrageenan is a good source of roughage and is largely indigestible, making it a valuable component in weight loss drinks. In addition, carrageenan coats the intestine and moderates the transfer of sugar across gut membranes, making it potentially useful to persons with diabetes for the control of blood sugar levels (Lamela et al. 1989, Dumelod et al. 1999; Vaugelade et al. 2000).

Although there have been some studies in which high levels of degraded carrageenan fed to animals appeared to have negative effects on health, recent
investigations confirm that undegraded carrageenan used in concentrations
normally found in food preparations poses no health risk (Cohen & Ito 2002).

In industrial manufacturing, carrageenan is refined and blended with other
emulsifying and gelling agents to develop precisely-defined additives. However,
this is not essential for cottage scale processing, especially in the preparation of
foods and health products where minerals, micronutrients and other
components of the seaplant are desired in the final product. In this case, simple
whole plant aqueous extracts are preferred.

Seaplants in beauty products

Carrageenan gels are emollient (skin softening) and ease dry, scaly skin. Blended
with healing herbs, these extracts can provide a degree of relief from inflamed
skin conditions. They absorb readily into the skin, providing rehydration that
plumps up and effaces fine lines and wrinkles. Of particular note for cosmetic
preparations is fucoidan, which has been shown in human trials to improve the
elasticity of skin (Fujimura et al.2002). Whether one inspects labels of high end
cosmetics and spa products, searches patent records for new products or googles
the word “seaweed” on the internet, it is obvious that various marine plants are
gaining popularity as ingredients in a wide variety of modern health and beauty
products. These are part of a global market trend towards “healthy”, “natural”
and “organic” consumer products. The popularity of such products parallels a
disturbing rise in the incidence of immune diseases, allergies, environmental
illness and chemical sensitivity in western industrialised countries. Women, the
main consumers of health and beauty products, are much more likely to seek
medical help for chemical sensitivities than are men (Roy Fox M.D. pers. comm.).

Small business development as a tool for community-based fisheries
management

All around the world, fisheries are in trouble. For small islands where people
depend heavily on inshore fisheries for food and livelihoods, the depletion and
destruction of fish habitat through population and development pressures,
overfishing and pollution is a particularly serious problem. For example, Pacific
Island nearshore resources are under threat not just from climate change and
urban pollution but also from unsustainable pressure from fishing communities
(Wilkinson 1992, World Bank 2000, Novaczek et al. 2005). At the same time,
these fisheries provide a high proportion of the protein consumed by coastal
dwellers of the South Pacific (Wright 1993). Recognizing the damage done and
wanting to improve fisheries for the future, many communities across the region
have begun working with universities, environmental organisations and
fisheries departments to find ways of actively managing and conserving their
marine territories (Novaczek et al. 2005). This often involves the banning of
fishing activities on inshore reefs that are traditionally used by women and
children for gleaning family food (Tarisesei & Novaczek 2005, Siamomua-
Momoemausu 2005). Although a decision to ban fishing may be a necessary step
in rehabilitation of a fishing ground, in the short term it generates a demand for alternative economic development.

New sources of livelihood, for example aquaculture or the harvesting of previously neglected marine resources, are options for helping to replace income and improve food security. This was officially recognized recently when fisheries staff from across the South Pacific region ranked seaplant aquaculture as one of the top prospects for rural economic development. However, growing an exotic seaplant such as *Eucheuma* to sell in unprocessed form to global corporations who effectively control the market price is an unsatisfactory route to development of sustainable alternative livelihoods. The global market for seaweed extracts (phycocolloids) provides very small returns to primary producers. Also, the continued presence of a large phycocolloid company in a small island nation is not assured. Transportation costs of the raw seaplants are significant and so the company’s presence often depends on government subsidies – funds that then are diverted from other priorities such as clean water, sewage and waste management, health care and education. The coastal communities that turn to seaweed aquaculture for livelihood are perilously dependent on the corporations. They have no control over prices and lack bargaining power. One way to hedge one’s bets and build in resilience is to find value-added processing options and local uses for seaplants that allow people to benefit from their harvest, whether or not they can sell it into the global market for a fair price.

**Seaplant products for small enterprise development**

There are many unrecognized opportunities to develop cottage industries based on the edible and medicinal seaplants of the South Pacific Islands. The more common and larger seaplant species are particularly suitable for commercial development, being readily available, fast growing and accessible from shallow water habitats. As noted above, useful nutritional and medicinal extracts are water soluble and can be processed with very simple technologies. The possible products that could be manufactured at a cottage or small enterprise scale fall into several categories, i.e. foods, beverages, health products, cosmetics, livestock feeds, soil amendments and handcrafts.

*Food and beverage options*

For harvesters close to an urban market or airport, sales of high-value, fresh, edible seaplants is an option. Whole dried seaplants can also be sold as health foods without further processing. Some can be ground into flakes or powders and used to make nutritional supplements, seasonings, pastas, soup mixes, tea mixes etc. Some seaplants, such as the agarophyte *Gracilaria*, can be prepared as pickles.

Seaplants containing carrageenan can be used to produce custards and pie fillings, fruit jams and jellies, candies, health or sports drinks, diet milk shakes and jellied meats. Powdered carrageenophytes can be used as a thickening agent for health conscious consumers trying to reduce their fat intake, or avoid wheat. There may also be opportunities to prepare a clean flake or powder for use in
beer brewing or home beer kit production, as carrageen seaweeds are traditionally used as a finishing agent for beer.

Although some of these food and beverage products are most suitable for mass production in factories, many can also be produced in small batches for sale in local, traditional farm markets.

**Health & beauty products**
Because carrageenan gel acts as an emulsifier, it can be used to blend water-based seaweed and herbal extracts with oils to make creamy mixtures suitable for use on skin. Seaplant extracts can also be incorporated into hair treatments, massage oils and soaps, face masks and body wrap preparations. Seaplant beauty products thus include skin creams, soaps, bath salt mixes, aftershave gels and massage oils and spa products such as bath mixtures, muds, massage creams, facials and hair treatments. These types of products can be manufactured at a cottage or factory scale.

On the health side, one can also prepare poultices, medicinal skin balms, steam inhalant mixtures, therapeutic massage oils, medicinal teas and cough syrups using seaplants.

There are currently several micro-enterprises in Fiji, Vanuatu and Papua New Guinea that make and sell these types of seaplant-based health and beauty products (Novaczek & Stuart in press). Further options involve the setting up of service centres – in effect, small spas where people can receive treatments including facials, hair treatments, massage etc. This allows the entrepreneur to apply freshly made products directly on the customer without having to worry about packaging and labelling for retail markets.

**Handcrafts**
Seaplant micro-enterprises may also be based on handcrafting. For example pressed seaplants can be mounted as works of art or incorporated into handmade paper. Carrageenan gels are used as a medium for floating pigments to make unique marbled papers and marbled cloth for handcraft production. Certain large seaplants have been used in basket weaving, wreaths and sculptures.

**Agricultural products**
Where the local resources include significant volumes of large seaplants such as *Eucheuma* and *Sargassum*, these can be dried, ground up and blended into livestock feeds and nutritional supplements; potting soils, soil amendments, organic fertilizers and compost accelerators; or processed to make garden mulches or liquid fertilizers. Seaplants have a long and well-documented history as agricultural aids (e.g. Booth 1965, 1969; Featonby-Smith & van Staden 1983, 1987). They are promoted as organic soil amendments that improve soil tilth, improve crop growth, nutrient content and flavour, and strengthen crops.
against fungal diseases, viruses and insect pests. As livestock feed additives they
have a reputation for promoting health and reproductive success in livestock
(Brewer et al.1979, Turner et al 2002).

Ecological considerations
As noted above, there are perhaps 100 edible & medicinal species growing
around the islands of the South Pacific. However, relatively few are large or
common enough to support commercial harvesting (Table 1) and before these
are exploited there need to be management systems in place to ensure
sustainability of the resource. Because most of the target seaplants grow on
shallow water reefs and in lagoons that are commonly women’s fishing grounds,
the participation of women in the development of management arrangements
will be essential. The local extinction of populations of the popular edible
Caulerpa (nama) in Fiji is a warning of what can happen when the harvesting of
wild seaplants is allowed to proceed unregulated.

Cladosiphon, a brown seaplant confined to Tonga and points south where waters
are cooler, is already commercially exploited by international corporations for
production of health tonics. This commercial activity requires effective control
because Cladosiphon is attached to the bottom by a single slender stipe ending in
a tiny holdfast. This plant is easily removed in its entirety and therefore
vulnerable to wholesale removal from any given habitat. Gracilaria and Caulerpa
species are similarly vulnerable.

Sargassum, though one of the most abundant Pacific seaplants in terms of
biomass, could also be vulnerable to improper and overenthusiastic harvesting.
Sargassum provides a valuable habitat that shelters and feeds a wide variety of
small marine animals, including the juvenile forms of many edible fishes. This is
a plant that grows from the tip. If branch tips are removed, Sargassum responds
like a land shrub. New branches emerge from the axils of lower branches and
the plant regrows in a more densely branched and bushy form. Appropriate
harvesting of living plants would therefore involve removal of the clean, actively
growing tips while taking care to leave sufficient basal material attached to the
sea floor to allow regrowth. In eastern North America, where a related species
(Ascophyllum) is harvested by the tonne using mechanical harvesters, ecologists
and fishers have serious concerns about long term sustainability and the impact
on fish habitat of the large scale removal of seaplant biomass. Some commercial
harvesters do selective removals or harvest in narrow strips, or restrict
themselves to hand harvesting methods in order to maintain both the habitat
value and the resource. This latter approach is recommended for the Pacific
Islands, because small island resources are, by definition, limited and vulnerable
to disturbance, and they are critical for local food and livelihood.

Hydroclathrus has a much different shape and method of growth than Sargassum.
It starts life as a hemispheric bubble, which expands rapidly, often overgrowing
other seaplants and attaining diameters up to half a meter. As it grows, the
bubble develops holes, which is why Fijians call it “the mosquito net “. Growth
is diffuse, and the plant has multiple points of adherence to the bottom. When
harvested, many fragments are left behind stuck to the bottom, and these are able to continue to grow and reproduce. *Hypnea* is fragile and typically grows in a tangle with other plants and so harvesting always leaves many fragments behind which can regrow. *Enteromorpha* is a weedy, rapidly growing species that reproduces often and abundantly, and so is difficult to overharvest.

Because harvesting needs to be performed carefully and selectively this implies a need for training for harvesters.

*Eucheuma* is cultivated. Systems have been developed elsewhere for cultivation of *Gracilaria* and *Caulerpa* and it may be possible to bring all the species in Table 1 into cultivation if necessary.
Table 1. Some common edible and medicinal seaplants having potential for commercial exploitation in the South Pacific.

<table>
<thead>
<tr>
<th>Genus (Family &amp; Order)</th>
<th>Description</th>
<th>notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Caulerpa</em> (Caulerpaceae, Bryopsidales)</td>
<td>Medium sized green</td>
<td>Edible. Several species; Commercially harvested for food in Fiji; valued sea vegetable in Japan</td>
</tr>
<tr>
<td><em>Cladosiphon</em> (Chordariaceae, Ectocarpales)</td>
<td>Medium sized brown</td>
<td>Commercially harvested in Tonga for medicine; valued in Japan as a fresh sea vegetable</td>
</tr>
<tr>
<td><em>Enteromorpha</em> (Ulvaceae, Ulvales)</td>
<td>Large green</td>
<td>Useful for food and agriculture; several species; especially abundant under eutrophic conditions</td>
</tr>
<tr>
<td><em>Eucheuma</em> (Areschougiace a, Gigartinales)</td>
<td>Large red</td>
<td>Cultivated in Fiji, Kiribati, Solomon Islands. Useful for food, medicine, cosmetics, handcrafts, agriculture</td>
</tr>
<tr>
<td><em>Gracilaria</em> (Gracilariaceae, Gracilariales)</td>
<td>Large red</td>
<td>Useful for food, medicine, agriculture; several species, throughout the region</td>
</tr>
<tr>
<td><em>Hydroclathrus</em> (Chordariaceae, Ectocarpales)</td>
<td>Large brown</td>
<td>Useful for medicine, cosmetics, agriculture; Common throughout the region, especially in dry season</td>
</tr>
<tr>
<td><em>Hypnea</em> (Hypneaceae, Gigartinales)</td>
<td>Medium sized red</td>
<td>Useful for food, medicine. Several species, seasonally abundant throughout South Pacific</td>
</tr>
<tr>
<td><em>Sargassum</em> (Sargassaceae, Fucales)</td>
<td>Large brown</td>
<td>Useful for food, medicine, cosmetics, handcrafts, agriculture; several species, locally abundant throughout the region</td>
</tr>
</tbody>
</table>

**Access, harvesting and processing requirements**

Inshore marine habitats of the South Pacific Islands are generally claimed and sometimes actively managed by traditional chiefs of adjacent coastal communities. Harvesting rights must then be sought from these traditional authorities, who may demand payment for access to the harvesting area.

Once a prospective entrepreneur has either gained access to a harvesting area or reached an agreement to have local fishers harvest seaplants, there are many other factors to consider when developing a harvesting strategy. This can be illustrated using *Sargassum* as an example. *Sargassum* is large, widespread and often grows in extensive beds. Young *Sargassum* plants generally begin to grow late in the year (September – December) and reach their full size around April – June. Once the plants are fully grown they are often pulled off the bottom by ocean waves and cast up on shore. In the months of April through September it is common to find large mats of *Sargassum* floating in the sea, and large piles of cast *Sargassum* on beaches. The seasonally abundant beach cast material is
suitable for agricultural use, and potentially useful for extraction of alginates and other compounds. However, for most high end cosmetic and health product uses, and when harvested for food, *Sargassum* should be taken in peak condition – when still in the sea and actively growing. Plant condition often deteriorates near the peak of biomass availability.

All the seaplants listed in Table 1 exhibit seasonal peaks in size or abundance. Chemical composition may also vary from month to month through the growing season. Fortunately, seaplants do not have to be processed immediately into end products, but can be dried and stored for future use. Harvesting may therefore be pursued in pulses according to the availability and quality of the target plants. The harvest can then be dried and stored in a clean, dry, dark space until required for processing. If the harvester depends on solar energy for drying, this also constrains the harvest to periods of dry sunny weather. Availability of labour for harvesting and drying may also vary according to seasonal patterns of agriculture, fishing and cultural festivities. All these factors must be considered when developing a harvesting strategy.

The infrastructure required for harvesting and processing of seaplants to support local small business development is often already in place in fishing villages, or can be developed using cheap and available local materials. Harvesting at a small scale can be done by hand by people wading in shallow water at low tide. Alternatively, harvesting can be done by free diving, with support from a small boat or outrigger canoe. These are the common tools of the fishing trade found in any coastal village.

Solar drying of seaplants can be accomplished on any clean surface. Woven grass mats common in most Pacific households provide convenient drying surfaces, but have the disadvantage of lying directly in the path of small domestic animals. The best arrangement is to construct drying racks that have a platform about 4 feet above the ground, so that drying plants stay clear of dirt and small animals. On a raised platform the drying plants are more easily turned over and cleaned. Unwanted material can be culled out during drying and reserved for agricultural use (livestock feed, fertilizer, mulch). After drying to the required degree, seaplants must be placed in clean containers for storage or transportation to the processing facility.

At each step of harvesting and primary processing there are employment opportunities for village men, women and children which can be readily integrated into their daily patterns of fishing, farming and household chores. Persons engaged in handling fresh and dried seaplants need to be trained in basic sanitary practice.

Start-up requirements for cottage scale processing of foods and health and beauty products for local sale coincide with the existing equipment in a middle-class family kitchen. One needs a clean, dry storage area; a stove and refrigerator; stainless steel cooking pots; a sieve and cloth filters; a mixer or blender; measuring cups and spoons; mixing bowls and spatulas. The kitchen
should have a washable work counter, washable floor and walls and a sink with clean running water. The entrepreneur’s investment capital will likely be spent initially on securing proper packaging and labeling supplies; cleaners, disinfectants and preservatives; and any raw materials that cannot be harvested locally.

Seaplants and gender in development

Because of where they grow and how they can be used, seaplants are particularly attractive raw materials for women whose traditional roles include inshore fishing, feeding families and caring for the sick. The shallow waters in which the seaplants grow are typically used by women and children as fishing grounds. Because of communal ownership and access arrangements prevalent in the Pacific Islands, women in coastal communities have preferential access to seaplant resources within the marine territories attached to their village land base (Vunisea 2005). When it comes to value-added processing, women’s domestic skills and traditional medicinal knowledge of herbs allows them to blend herbal and seaplant extracts to produce unique and culturally appropriate health and beauty products. They can do this work in their own kitchens or in community kitchens and so be able to maintain their child and elder caregiving roles. In the Pacific, it is most often women who carry produce, fish and handcrafts to local markets. Women are the perfect salespersons for seaplant products, as the target customers for food, cosmetic and health care products are mostly other women.

In pilot projects based at the University of the South Pacific (Fiji campus) in 2001 – 2002, female herbalists interested in enterprise development were trained in the identification, harvesting and processing of local edible and medicinal seaplants. Trainees also learned basic business management, sanitation and product development skills. Some chose to just incorporate seaplants into their herbal medicine practice, but several went on to develop or expand viable small businesses in Fiji, Vanuatu and Papua New Guinea, focused on the production and sale of seaplant health and beauty products (Novaczek & Stuart in press). Seaplant products are now sold door to door, in offices, from home and in local markets. As these businesses expand the owners hope to establish formal retail stores, sell wholesale to other outlets and undertake export sales using the internet. In part, the success of these female entrepreneurs has hinged on the resonance of seaplant-based health products with local culture. Marine products are believed by many islanders to have inherent healing powers and to counteract the “evil eye”. A second factor in the entrepreneurs’ success has been the high degree of satisfaction the women derive from selling healthful products that they believe are of benefit to their communities.

Seaplant Enterprises and Tourism

Tourism is an important but largely unrecognised use of seaweed (Burges-Watson 2006). Seaweed museums, culinary tours, aquafarming experiences, marine theme health spas and festivals that celebrate local seaplant traditions and
industries can be found in a wide array of countries. Here are but a few examples: the Seaweed Pie Café on Prince Edward Island (Canada); ancient seaweed baths and Ould Lammas Fair (Ireland); and seaweed aquatourism on the small island of Nusa Lembongan, just off the coast of Bali (Indonesia). Similar seaweed tourism ventures are planned for Cebu in the Philippines and Zanzibar, Tanzania (E. Ask pers. comm in Burges Watson 2006).

The perception that seaweed is unusual, or part of an ancient heritage, can make it an object of tourist desire. For small scale seaplant entrepreneurs, tourism offers an easily accessible “export” market made up of sophisticated customers who may well be attuned to “fair trade”, “organic”, “natural food” and other such marketing angles that are naturally attached to such seaplant-based products.

Conclusions: the prospects and requirements for seaplant micro-enterprise development in South Pacific Islands

Seaplants represent a largely underutilised resource for small business development in the islands of the South Pacific, one that is particularly promising as a livelihood resource for enterprising women. To date, what focus there has been on seaplants has been in the form of attracting the multinational phycocolloid industry to develop aquaculture plantations for an exotic carrageenophyte. However, given the realities of environmental limits, transportation costs and market vulnerability of small islands in a global economy, it makes sense to hedge the risk of industrial aquaculture by fostering value-added processing of seaplants both for local and export markets. In the global market place, seaplants rank high with organics as up-and-coming functional foods for the health conscious consumer, and are also gaining appeal as ingredients in herbal medicines and cosmetics.

To realise the potential of seaplants as a driver in a local economy, and especially as an opportunity for entrepreneurial rural women, there are a number of institutional arrangements to be developed. These include arrangements for the local management of harvesting of seaplants for sustainability. Such management institutions must include women and youth who are the predominant fishers in many shallow inshore habitats where seaplants of interest are found.

Prospective entrepreneurs also require training, and some effort needs to be directed at making such programs accessible to women (Vunisea 2005). Access involves not simply allowing women to attend, but actively facilitating their involvement, taking into consideration their other civic and domestic roles, their time constraints and other realities such as limited access to capital and transportation, child and elder care needs, and constraints related to language and literacy.

Training needs for prospective entrepreneurs include courses in seaplant identification and sustainable harvesting, basic business management and book-
keeping; sanitary handling and processing; co-operative purchasing and marketing. Small entrepreneurs and especially women need access to development grants and low interest loans. They also need assistance in raising public awareness of the benefits of seaplants in the diet. These are programs that governments, university extension staff and/or community development organisations can provide.

Given targeted assistance for rural health practitioners and micro-entrepreneurs, it will be possible to encourage an array of sustainable enterprises in both rural and urban settings, ranging from not-for-profit healing centres through cottage industries directed at local markets, to small manufacturing firms. Such enterprises have natural advantages for culturally appropriate and sustainable community development on small tropical islands. Assuming they are conducted at an appropriate scale (consistent with the resource base and local market) they will draw on local resources that are currently relatively underutilized; they will be based on and incorporate knowledge from the indigenous culture; and they will fit into rural people’s patterns of multi-stranded livelihoods. Such development could be valuable not only for local economic development, but also to promote gender equity, to honour the work done by women in caring for children and elder family members, to provide a tool for coastal resource management, and to support locally controlled tourism and community health care. Because seaplants are among the rising stars in the organic / slow food / natural markets of the metropole, these enterprises also have potential to build into enterprises that can send high value, niche products into export markets.

References


Introduction

In order to protect the biodiversity and the cultural heritage of the island, UNESCO declared the entire island of Siberut (Mentawai Archipelago, West Sumatra, Indonesia) a Man-and-Biosphere Reserve in 1981. At that time the island was threatened by commercial logging and WWF had just started its ‘Saving Siberut’ campaign. With this external interest it should be possible to avoid further degradation of the island’s environment. ‘The battle for Siberut’ had started.

Over the years numerous conservation organisations have taken an interest in the island with a variety of action plans and strategies. At present however, the results of these collective efforts seem far removed from the initial projections. Lack of cooperation between the mainly foreign organisations, occupying a position as third parties between the government and the local population, and the short-lived cycles of external interest, explain at least part of the current situation.

The purpose of this paper is to look back at the conservation history of the island and to discuss what has been the impact of the various external interventions, with particular attention to UNESCO’s Man-and-Biosphere programme. This paper is also an effort to look into possible future developments. The newly acquired administrative status of the Mentawai Archipelago as a district, the changing position of local indigenous communities in the post-Suharto political era and the current re-organising of the logging industry in Indonesia turn Siberut into an interesting case for the study of resource management on a particular island.

The island

Siberut is the largest of the Mentawai Islands off the west coast of Sumatra. The population is predominantly Mentawaian (almost 30,000 people). Relatively small groups of people originate from other ethnic groups such as the Minangkabau, Javanese and Batak. Traditionally the people lived in small settlements along the banks of the rivers that cut through the thick forest. People were living from hunting and gathering and the domestication of pigs and chickens. Sago is the staple food and in addition they practice a form of shifting cultivation characterised by the importance of perennial crops. One of the most remarkable aspects of this system is the lack of fire. The vegetation is not burned after it has been cut. Trees and branches are left in

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the field. Seeds of fruit trees have been planted prior to the cutting of the trees and gradually the seedlings will find their way through the withering vegetation. In this way the soil is never directly exposed to wind, sun and rain thereby reducing erosion while the nutrients are released from the vegetation over a considerable period of time. Annual crops like upland rice or corn were unknown until recently.

Barter with traders from the mainland has taken place since a very long time. Turtle shields, fish, copra and various kinds of forest products such as rattan and resin were offered in exchange for iron ware, salt, cloth, tobacco and glass beads. In more recent times numerous other products were added to this list but the basic nature of the trade did not change. Resource extraction from the natural environment offered products which were in substantial demand by the traders from Sumatra.

Politically the people of Siberut were organised in small autonomous settlements consisting of one extended patrilineal family of up to 50 or 60 people, the so-called uma. Friendly relations were maintained with other settlements within the same watershed area, but people were never politically organised at this level. The Dutch colonial administration imposed a system of village heads on the traditional situation. The estimated 250-300 uma settlements were forced into a smaller number of kampung (village) in the early 1950s. The implementation of the 1979 law on the village administration again reduced the number of kampung on Siberut of about 60 to 20 desa (village), divided over two sub-districts under the district of Padang-Pariaman, with its capital in Pariaman on the mainland of Sumatra. Since 1999, however, the Mentawai Islands have become a district of their own, with the administrative centre situated on the second island within the archipelago, Sipora.

In the history of Siberut the Minangkabau officials and migrants have always perceived of the Mentawaians as primitive and backward people. They were supposed to be in urgent need of development. Missionaries brought Christianity from the late twentieth century onwards and various development programmes, specially designed for these isolated people were aimed at bringing the Mentawaians as soon as possible back into the mainstream of Indonesian social and economic life.

Logging operations have fundamentally changed the conditions on the island in the past few decades. Even though, in the perception of the local people there is no empty land – even the closed canopy forest is considered their property – the state has claimed the primary forest resources on the island for granting logging concessions since the early 1970s.

Within the Mentawai Archipelago most foreign attention based on a general respect for nature and lifestyles closely connected to the forest, has been aiming at ‘saving Siberut’, the island covered with a good deal of rainforest and harbouring an interesting traditional population. The combination of a relatively small island with traditional people in their intact natural environment forms a strong attraction for Western donor organisations working in the field of nature conservation.

Local people on Siberut have thus since long been in between government based initiatives of development and logging on the one hand, while on the other hand mainly foreign institutions have tried to turn the local population into an ally supportive of their conservation efforts. In general terms the reaction of the Mentawaian people towards outside interventions has been weak. This attitude is to be attributed to the lack of internal organisation and lack of experience in dealing with more powerful outside forces. The autonomous uma communities are simply not in a position to generate sufficient strength to resist external powers. There has never been a serious attempt to unify a number of uma communities for the sake of resistance. Throughout the history there has always been an attitude of conflict avoidance by
means of retreat or simply giving in or fighting with the ‘weapons of the weak’. Unobtrusive non-compliance with the regulations or temporary obedience has been the general attitude. Intimidation or threat of force has usually been sufficient to impose various kinds of policies upon the local people or their environment.\(^2\)


In the early 1970s almost the entire island was granted to four big logging companies with the exception of a small game reserve of 6,500 hectares in the middle of the island. In a rapid way operations were started. The necessary work force was hired from elsewhere as the local people were considered to be insufficiently skilled and not disciplined enough. A number of log ponds were constructed on the eastern side of the island. Initially the logs were exported to Western countries but after Indonesia banned the export of unprocessed logs in the early 1980s, the logs from Siberut were transported to saw mills in harbour towns in Sumatra, to Padang and Sibolga in particular.

Once in a while there were conflicts between the local populations and the logging companies over the damage done to stands of sago palms, fruit trees. Usually these conflicts were solved by the companies themselves or otherwise the police and local government stepped in. In the 1970s and 1980s there have never been violent conflicts between the companies and the local people.

In many cases small villages were founded close to the base camps of the logging companies. Some people provided the base camps with fresh fruits, fish and meat. And as time went on a number of young Mentawaians were able to join the logging companies for low paid jobs. This allowed them to earn a watch, a radio or some new clothing. Many of the youngsters quitted the job after a couple of months. During the twenty years of logging serious damage has been done to a large part of the forest on the island. Taxes for reforestation were paid to the Forestry Department in Jakarta, but factual reforestation never took place. One of the side effects of the logging activities was the implementation of a special development programme designed for shifting agriculturalists. This resettlement programme was funded with special taxes charged to the logging companies. The aim of these resettlement villages was to reduce the use of good forest by shifting cultivators. The development programme that was implemented in these villages aimed to turn the local people into permanent agriculturalists, cultivating rice and living a regular village life, thereby at least partially erasing the traditional Mentawaian lifestyle based on a life in the forest.

Small scale illegal logging operations with further degenerating effects on both the soil and the vegetation, generally taking place in the wake of the commercial logging companies has virtually been absent on Siberut. Whereas local people are able to satisfy their own demand for wood for the construction of houses or canoes, there is no local market for illegally cut wood and export facilities for this kind of wood are simply absent.

Over the years a number of national, but mainly international organisations have been struggling to ‘save Siberut’ from devastating commercial logging activities and the establishment of oil palm plantations. Around 1980 when logging was in full operation, WWF started to struggle for expansion of the small reserve area to save the island.

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\(^2\) There is a relative abundance of literature about Siberut. See Schefold (1988) for an extensive description of the traditional situation and Persoon (1994) for the modernisation processes on the island.
wildlife on the island, the four endemic primate species in particular. This could of course only be achieved if the natural habitat of the animals, the forest would be protected. For that reason reconsideration of the previously issued logging concessions and the establishment of a sufficiently large nature reserve would be a necessary step (WWF 1980). The strictly protected area was expanded to about 56,000 hectares and a traditional use zone was proposed to surround this core conservation area. In 1981 UNESCO announced that the whole island was included in its Man-and-Biosphere programme. After 1982 WWF terminated its involvement in Siberut, leaving the conservation efforts to UNESCO and the Indonesian Department for Nature Conservation (WWF 1982). From within Indonesia, the Jakarta based non-governmental organisation SKEPHI (Indonesian Network on Tropical Conservation) got involved in the actions to save Siberut from being converted into a large palm oil plantation. SKEPHI did so through campaigning and lobby activities on the island as well as in Padang and Jakarta while it also tried to link up with a number of sympathetic organisations abroad (see e.g. SKEPHI 1992).

Quite unexpectedly in 1993 when renewal of logging concessions was being discussed in Jakarta, the president of Indonesia signed an agreement that all logging concessions on the island were to be terminated and that about half of Siberut (192,000 hectares) became a National Park. The initial planning made use of the island nature of Siberut: no logging, transmigration, oil palm plantation or any other serious land use transitions within and adjacent to the National Park. The Asian Development Bank (ADB) agreed to fund the multi-million dollar project proposal to implement the management plan for the park, including all kinds of development activities for the indigenous population and tourism (Persoon 2003). The Siberut Project was an important part of the ADB Indonesia Biodiversity Programme. Within a couple of months all logging operations were terminated, heavy equipment was shipped back to Sumatra and so an important chapter in the ecological history of the island was closed, at least temporarily (ADB 1995).

The power shift in the Mentawai Archipelago and its adherent rush for natural resources ensued by the introduction of regional autonomy, has again marked a remarkable shift in the position and importance of Mentawai’s natural resources. A head start in logging Siberut’s forests has recently been made by Koperasi Andalas Madani (KAM), a logging cooperative operating under the supervision of the Padang-based state Andalas University, which got a controversial logging permit issued for 49,650 hectares immediately adjacent to the National Park, thereby ignoring earlier agreements as laid down in the ADB funded Siberut Project. Though facing some serious societal protests, logging activities have started in September 2001 and are continuing until the present day (Tempo 2001; YCM 2002). In a joint undertaking UNESCO, Conservation International Indonesia (CII), Siberut National Park and a local NGO have started a lobby against both KAM and countless small-scale logging concessions issued by the newly installed local government. So far their advocacy has not been very fruitful.

The Washington based organisation Conservation International (CI) had its focus on Siberut for already quite some time, but its role remained insignificant for quite some time due to the fact that they were given to understand by the project manager of the MOF/ADB project that there was no need for CI to expand its activities to Siberut, because the island was fully covered by the MOF/ADB project. Shortly after the MOF/ADB project was withdrawn, CI re-appeared on stage. Their initial plan to purchase all pending as well as active logging concessions for Siberut was soon considered to be impossible to implement. The plan proposed to compensate
the local government for the potential loss of revenues from the logging sector in return for a total log ban for Siberut. Apart from the local government, local communities were also accounted for in the plan: they would become subject to various sustainable development projects implemented by a selection of local NGOs that would receive finances for these projects from CI. After the initial project period was evaluated it became clear that it was far more complicated than expected to unanimously gather local communities behind the conservation goal. Since regional autonomy, many local communities in Mentawai are – inspired by quick profit – handing over their lands to logging companies on a large and uncontrolled scale. Moreover, the ADB experience with local NGOs learned CI that the pool of local NGOs did indeed harbour a considerable amount of local organisations but that the majority of these organisations were not particularly outstanding in professionalism. Local NGOs turned out to lack sufficient capacity, reliability and authority to be able to successfully implement the planned sustainable development projects. Probably the most important factor in CI realising that their plans were basically impossible to implement is the unwillingness of the local government to cooperate.

CI’s initial ambitious plans have thus disappeared to the background. Apart from a partnership established with UNESCO which mainly manifests itself in a political lobby for a log ban for Siberut there are little to no activities by CI on Siberut. Leaning on an article that appeared in Media Indonesia (2003) one might suggest that CI lost its faith in the possibility of successfully safeguarding the forests on Siberut. The article states that it is difficult to maintain nature conservation on Siberut due to the fact that the local government – the district head is mentioned in particular – is such a strong protagonist of commercial logging in the archipelago.

1981 – 2006 Siberut as a Man-and-Biosphere reserve

WWF’s master plan (1980) has obviously been a deliberate step in the direction of declaring the island of Siberut a biosphere reserve. The concept of biosphere reserves derives from the first intergovernmental conference organised by UNESCO in 1968. Two years later, UNESCO launched a Man-and-Biosphere (MAB) Programme which is one of UNESCO’s cornerstone programmes until this day. The MAB Programme is worldwide aiming at the improved relationship between people and their environment, thereby addressing one of the most pressing contemporary issues: how to reconcile conservation of the world’s natural resources and its biological diversity with their sustainable use? By April 2005, 459 sites in 97 different countries have been designated as Man-and-Biosphere reserves (Hill 2005). Biosphere reserves are areas of terrestrial, coastal, and marine ecosystems nominated by national governments and when admitted to the World Network of Biosphere Reserves internationally recognised under UNESCO’s MAB programme. Though internationally recognised MAB reserves remain subject to the sovereign states of which they are part. Eligible areas have to meet a set of criteria allowing them to properly fulfil a conservation function (to contribute to the conservation of landscapes, ecosystems, species, and genetic variation), a development function (to foster economic and human development which is socio-culturally and ecologically sustainable), and a logistic function (to provide support for research, monitoring, education, and information exchange related to regional, national, and global issues of

3 See also http://www.conservation.or.id/ (September 2005)
conservation and sustainable development). Biosphere reserves are physically organised into an integrated zonation system, consisting of a core area (a securely protected area for long term conservation of biological diversity, monitoring, research, awareness education, and other low impact activities), a buffer zone (usually situated surrounding or adjacent to the core area and used for ecologically sound and cooperative activities including environmental education, recreation, ecotourism, and research, and a transition zone (used for agricultural activities, settlements, and other relevant activities in which local communities, management agencies, scientists, non-governmental organisations, cultural groups, economic interests, and other stakeholders work together to manage and develop the area’s resources in a sustainable manner). Indonesia currently counts six biosphere reserves, one of which is Siberut Island. The exceptionally high degree of endemism on the island, already indicated by WWF, was one of the main reasons for Siberut to be declared a biosphere reserve in 1981. The Siberut Biosphere Reserve covers the whole island of Siberut and the direct marine surroundings with its coral reefs.

Although Siberut was included in the UNESCO Man-and-Biosphere Programme already in 1981, factual activities to support the management of the island’s natural and cultural heritage were initiated only in 1998. Apart from the island being flagged on UNESCO’s map of the world, there was very little action on Siberut itself. No activities were undertaken in the field and to our knowledge UNESCO was largely absent during the turbulent period of the 1980’s. It was hard to disclose a clear reason for this lack of attention and inactivity. Apparently Siberut did not feature on the priority list of the organisation. After all those years it was mainly because of the initiative taken by an expert from Belgium that UNESCO was reminded of its special relation to the island of Siberut by including it in its Man-and-Biosphere network.

During the years 1998 through 2000 the Siberut Programme has primarily engaged in research producing inventories (natural resources, birds, butterflies, rattan, insects, riverside plants, marine resources, and non-timber forest products), and case studies covering various topics (eco-tourism, land tenure and indigenous rights, behavioural and genetic study of primates, and the empowerment of local communities in the sustainable use of medicinal plants). During this first phase a community water supply system has been realised in the village of Maileppet.

In the initial project proposal titled: Conservation and Sustainable Development in the Siberut Biosphere Reserve the Mentawaian communities living in the Siberut Biosphere Reserve are portrayed as one of the few remaining indigenous communities whose way of life is still primarily dependent on the traditional use of resources. The proposal further mentions that many parts of Siberut still feature a semi-subsistence economy in which the forest serves as a storehouse providing food, medicines, and other material input. Simultaneously, customary environmental management systems ensure economic continuity and at the same time contribute to the protection of the island’s biological diversity (UNESCO 1999). A kind of indigenous conservation ethic was thought to be present in the traditional lifestyle of the community.

In response to persisting – one might even say worsening – environmental threats to Siberut’s ecology, continuous and rapid societal change creating altered

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4 See also [http://www.unesco.or.id](http://www.unesco.or.id).
5 The other five MAB reserves in Indonesia are: Gunung Leuser National Park, Cibodas (including Gunung Gede-Pangrango National Park), Tanjung Puting National Park, Lore Lindu National Park, and Komodo National Park (also recognised as a natural World Heritage site).
lifestyles, and the new governmental context that ensued after regional autonomy was introduced, UNESCO initiated a new phase in the Siberut Programme in 2001, entitled: *Empowerment of Customary Environmental Management* (UNESCO 2001). Where in an earlier stage only UNESCO staff, a local NGO, and the National Park management was involved in the co-management team responsible for all levels of programming in the field, by 2001 the team extended partnership with the local government, one more local NGO, five local communities and Conservation International Indonesia (CII). Since 2001 UNESCO has been working on various projects using bottom-up strategies and participatory approaches all aiming at the empowerment of local communities and their guaranteed involvement in the management of their lands. In this context village management plans were produced and various training courses on alternative (other than logging) income generating activities, several workshops and village meetings and awareness raising campaigns have been organised.

Until 2004 the management of the Siberut Programme has been in the hands of the earlier mentioned Belgium expert, who has been leading the programme based on an almost non-stop presence in the field. In 2004 the management of the Siberut Programme has been handed over to a local person. After six years of non-stop attendance in the field, the right moment had arrived for the Belgium expert to be replaced by a person with a fresh view on the difficulties UNESCO encountered while trying to implement the Siberut Programme. Although this local person is of mixed ethnic origin and the Siberut Programme is still clearly guided by the UNESCO headquarters in Jakarta, this management shift is a clear fulfilment of UNESCO’s wish for local communities to manage their own MAB reserve.

Working with other members of the Siberut Taskforce established in 2002, including Conservation International Indonesia (CII), Lembaga Ilmu Pengetahuan Indonesia (LIPI, the Indonesian Institute of Sciences), Directorate General of Forest Protection and Nature Conservation (PHKA) of the Indonesian Ministry of Forestry (MOF), various indigenous communities on Siberut, UNESCO advocated for conservation and environmentally compatible development on Siberut Island in line with the Seville Strategy for Biosphere Reserves. Due to its strong advocacy efforts the Siberut Taskforce has been able to raise awareness within the Ministry of Forestry with regard to the status of Siberut as a biosphere reserve. As a result the Minister of Forestry has established a team (of which UNESCO is also a member) to investigate all logging activities on Siberut and check whether these activities are in line with the island’s status as a biosphere reserve.

Alongside the general programme a non-formal education programme has been operative from 2000 onwards. This so-called *pinatoro uma* (literally: the

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6 The International Conference on Biosphere Reserves, organised by UNESCO in Seville (Spain) on 20-25 March 1995 resulted in the formulation of the so-called Seville Strategy; a strategy providing recommendations for developing effective biosphere reserves and for setting out the conditions for the appropriate functioning of the World Network of Biosphere Reserves effectively dealing with the conditions of the 21st century (population growth and certain trends in distribution, increasing demands for energy and natural resources, globalisation of the economy and the effects of trade patterns on rural areas, the erosion of cultural distinctiveness, centralisation and difficulty of access to relevant information, and uneven spread of technological innovations - all painting a sobering picture of environment and development prospects in the near future). Instead of repeating the general principles of the Convention on Biological Diversity or Agenda 21, the Seville Strategy identifies the specific role of biosphere reserves in developing a new vision of the relationship between conservation and development (http://www.unesco.org November 2005).
enlightened house/clan) project has primarily been aiming at the empowerment of local communities through an increase in levels of literacy. In the course of 2003 the pinatoro uma project has been handed over to a local NGO, soon after which the project fainted due to a lack of organisation and funding (Puailiggoubat 2003a: 5).

Ever since the start of the Siberut Programme, UNESCO advertises the programme as an outstanding example of the interdisciplinary nature of UNESCO’s operational procedures. In its activities the Siberut Programme has blended and integrated many different sectors in which UNESCO is active, including MAB, Education, Social and Human Sciences, Coastal and Marine Sciences, and Hydrology (www.unesco.org; UNESCO 2003, 2004). It seems like UNESCO has turned Siberut into the flagship of their MAB Programme. Fact is, however, that many local people do not feel as comfortable with the presence of the Siberut Programme as UNESCO wishes they would do (Puailiggoubat 2003b: 5).

A major change in the programme’s activities was caused by the December 26 2004 tsunami and the large number of earthquakes and shocks that followed in its aftermath. The number of victims and casualties of the tsunami on Siberut was very little, as was the damage done to private houses and other buildings. This can be explained by the fact that – even though Siberut is located at relatively short distance of the centre of the earthquake – the waves passed by the largely uninhabited west coast of the island. The fact that the number of casualties was limited needs also to be attributed to the fact that most houses built on Siberut are wooden constructions that do not as easily collapse under the forces of an earthquake as concrete constructions do. Wooden constructions more easily absorb shocks and do not simply collapse as was the case with the thousands of cheaply built concrete houses and shops on the nearby island of Nias, killing thousands of people.

In particular during numerous earth shocks in the months that followed people left their houses and slept in the hills. Throughout the year 2005 the UNESCO programme changed the focus of its activities from biodiversity conservation to the provision of information about earthquakes and tsunami’s and how to be prepared for these natural phenomena, using information and promotion materials that were produced by the California Institute of Technology and LIPI in an earlier stage. UNESCO also provided the people who fled to the hills with shelter and food for some months. Over the months people gradually lost their fears and started to move back to the villages along the coast.

Present political situation

Since October 1999 the Mentawai Archipelago forms its own district. Their detachment from the mainland district Padang-Pariaman was by many perceived as a final release from the political hegemony of the mainland Minangkabau over the Mentawai islands. The creation of the new district Kepulauan Mentawai is an interesting pioneer case in the pan-Indonesian process of pemakaran (literally: blossoming; here aiming at bureaucratic fragmentation) which ensued soon after two new laws on regional autonomy passed parliament late 1999 (Schulte Nordholt 2003). The creation of the new Mentawaian district marks a remarkable power shift within Mentawai. Although the process needed some time to consolidate the Mentawaians have succeeded in completely taking over the political power within the archipelago since 2001.
In broader circles it was strongly believed that such a transfer in decisive power from the central government to the district level government would form a powerful incentive for both local communities and governments to make use of natural resources on a more sustainable basis (Down to Earth 2000). Local autonomy has indeed lead to a greater sense of ownership, but unfortunately not to a greater sense of concern and care for local natural resources. The newly obtained power, now in the hands of local communities and local government, has quite on the contrary instigated a rush for Mentawai’s natural resources.

Together with local autonomy, local governments became responsible for gathering revenue within their own region. This was why many believed that local autonomy would – with an eye on the long term possibilities for development within the region – trigger greater concern and subsequent sustainable exploitation of natural resources within the regions. Districts with limited or no natural resources available would remain to receive an annual budget from the central government (Aspinall & Fealy 2003). Whereas the Mentawai Archipelago was a newly formed district which basically had to start from zero in every respect, it was decided that its government would receive an annual allowance during the first five year period 2001-2006 in order to develop necessary physical as well as bureaucratic infrastructure for successful self-governance. And indeed this budget was used for bureaucratic expansion and physical development in the region, thereby creating a considerable amount of good-will among the Mentawai residents, finally receiving the development projects for which they had been waiting in vain for such a long time. New roads, schools, hospitals, governmental offices and increased opportunities for travelling in between the Mentawai islands and the Sumatran mainland were all realised on relatively short notice.7 Although people sometimes complain about the quality of the new facilities, on an overall sense they feel proud of these newly gained icons of progress and modernity in their area (Eindhoven 2002 and forthcoming).

With the prospect of receiving an even larger annual budget in mind, the annual development allowance triggered a process of further bureaucratic fragmentation (pemakaran wilayah), re-dividing the Mentawai territory over an increased number of sub-districts. The process of upgrading the Mentawai Archipelago from four to ten sub-districts is at the moment of writing in full swing; once more creating new bureaucratic positions and projects responsible for the subsequent infrastructural expansion needed. With the speculation around and the execution of the projects mainly in the hands of the Mentawai political elite, the latter have created themselves a luxurious and for the time being financially secure situation in which there is little to no space left for the ordinary Mentawaians.

One should think that this situation would leave the Mentawai natural resources untouched, at least for some time. But, unfortunately this is not the case. Large part of the remaining forest on Siberut has been granted to logging companies even before the current head of district was officially installed. Not only was his political campaign financially supported by a logging company who he would grant access to the forests on the Mentawai territory as soon as he would become head of district, in 2001 nearly half of the island of Siberut already became subject to a

7 The large number of infrastructural projects handed out by the local government has created an invisible market for projects where project budgets due to speculation are stripped to an absolute minimum before the project itself is finally implemented.
8 Due to a general disinterest in the final result of the projects, many constructors make use of cheaper, inferior materials in order to save part of the budget for other, private purposes and finish projects in considerable haste in order to be able to rush to the next project.
logging concession in the hands of the mainland university, Andalas Universitas (Eindhoven forthcoming). With the head of district initially being allowed to grant permits for concessions up to 100 hectares, Mentawai’s current head of district has been responsible for the granting of numerous permits since his installation. Shocking thus was the message that appeared in the Jakarta Post (2005) stating that the Mentawai district government had so far not received any income from the logging activities taking place in the archipelago. What many people actually already expected and what vocal NGOs had been trying to disclose for already quite some time had now appeared in the largest national newspaper: the revenues from logging activities in Mentawai are disappearing in the pockets of government officials.

Different from the situation in pre-local autonomy days, local communities now have to be consulted before an issued logging concession can actually be activated. Logging companies therefore have to negotiate with local communities about whether and on what terms they are willing to hand over the trees on their lands to the logging company. Although on paper this might be called an improvement in the legal position of local communities, negotiations like these are seldom executed on a transparent and well-informed basis. Whereas local communities in Mentawai have only limited access to finances and not much experience on the market, they trade their lands in return for abominable prices. After all, for those who never had a 100,000 Rupiah note (some 10 US dollars) in their hands, being offered 15 million Rupiah for a piece of land is an exuberant bid. Although these negotiations are often leading to severe horizontal conflicts between clans and even between clan members, most locals are inclined to sell the trees, because the financial returns are too tempting.

Conservation agencies like UNESCO do not seem to be able to cope with these developments currently taking place in the Mentawai Archipelago. Where in earlier days UNESCO had to cope with governments at the central and provincial level only, they now have to deal with governments at various levels and with local communities simultaneously. While local governments are not so enthusiastic about UNESCO’s interference in the area, local communities are increasingly difficult to convince of UNESCO’s conservation efforts for which UNESCO is in need of their direct support.

The role of third parties and the challenge of conservation

The recent history of Siberut is hard to understand without the role of so-called third parties, that is parties that try to influence the course of events on the island in a particular direction. They include a wide range of international conservation NGOs, human or indigenous rights’ activists or strongly motivated individuals, including some of great reputation (WWF, Conservation International, UNESCO, Survival International, and The Rainforest Foundation). They all try to influence the local situation on the basis of self-defined or acclaimed interests or they claim to speak on behalf of distant donor or interest communities. Often their strategies are aimed at influencing governmental policies. By definition they occupy a somewhat delicate position as they have to operate from a relatively weak position and find a balance between pushing governments and local communities in a direction that is not self-evident to them. In addition to what they themselves believe to be strong arguments in terms of biodiversity values, degrees of endemism or collective human rights, real persuading power comes only in combination with financial prospects in a context.
with a high degree of (national and local) political correctness. Often it is the language of financial flows that can be understood. Talking without substantial financial undertones is not easily understood or accepted.

Many conservation organisations base their activities on the premise that local and even more so indigenous communities hold a special and intrinsically sustainable relationship with their natural environment. Reality, however, shows in many instances that dependence on the forest and other available natural resources does not necessarily lead to ecologically sustainable practices. It is a fact that indigenous peoples often have extended knowledge of their environment, but such knowledge is very localised and specific, based on the long attachment these people had with a particular niche within that natural environment. Indigenous knowledge of the natural environment should not be confused with western concepts of respect for nature. It is not necessarily that indigenous peoples have an environmental consciousness intrinsic to their culture and lifestyle that safeguards their natural environment from overexploitation. In the course of the environmental history of Siberut numerous examples have occurred in which the indigenous people have caused a great deal of ecological imbalance when certain innovations or market opportunities became available to them (Persoon 1991). Many conservation agencies, however, still base their programmes and project activities on this false premise, this ecological myth ascribed to local as well as indigenous communities.

This role of these third parties, or self-acclaimed care takers in one form or the other, is sociologically a highly interesting but somewhat neglected phenomenon. For a very long time outside agencies or committed individuals could claim to speak on behalf of people or values that could not make their voice heard. Anthropologists have often assumed this role on behalf of the people or village community that they studied. In recent years national NGOs in many developing countries have done the same. They were established on the basis of self-acclaimed representation, or care taking for people who did not know about them nor authorised them to speak on their behalf. The so-called level of democracy in terms of accountability, transparency and representation, was and still is very low in many cases. Often the non-governmental organisations in developing countries are of a different nature (see e.g. Hilhorst 2003).

At the moment there is an interesting somewhat parallel case in Indonesia in which conservation agencies have succeeded in persuading the government of a particular district to put conservation of biodiversity and natural resources on top of the political agenda. The head of this district Kupuas Hulu, the eastern most part of the province of West Kalimantan, proclaimed his area as a ‘conservation district’. Situated right in the Heart of Borneo, at the headwaters of the longest river of the country, the Kapuas, regulating the water level to downstream areas including the province capital Pontianak, the head of the district was convinced by the arguments of the conservation agencies that his area, contains one of the most valuable areas in the world in terms of rainforest, biodiversity, fresh water reserves, including a 132,000 ha wetland, Danau Sentarum (a Ramsar site). All kinds of metaphors have been used to express the importance of the region ranging from the ‘lungs of worlds’, ‘treasure of the country’, ‘storehouse of biodiversity still holding large numbers of undiscovered species of plants and animals’. The area, with five large protected areas, including two national parks, covering almost 60% of the district, is said to be to national and international importance. By proclaiming his area a conservation district he is now challenging the provincial, Indonesian and international authorities and agencies to not only support this notion on paper but also to substantiate this relevance (Husin 2005). This could be done through all kinds of financial mechanisms ranging from
compensation measures for reduced resource exploitation, payment for environmental services, or clean development mechanisms (CDMs). If these would not materialise within a relatively short time the head of Kupuas Ulu would have a hard time to justice the maintenance of the district’s conservation status among the population which is among the poorest districts in the entire country. The insufficient awarding for the up keeping of the natural wealth would undoubtedly imply the end of the political career and popularity of the district’s head. In present day Indonesia political voting of the people is largely based on expectations for benefits within a relatively short time span. For too long, people have been silenced or were misled by false promises. This time has passed.

The government of Mentawai has never made this kind of policy statement in spite of the long standing interest of outsiders in conservation. On the contrary, it has always tried to combine development (or may better: income generation) through resource exploitation with imposed or externally motivated biodiversity conservation. The relatively meagre financial resources that were allocated for this purpose, have made it almost impossible to support wholeheartedly these kinds of initiatives. And just like in the case of Kupuas Hulu, this is also unlikely to happen in the near future. A decentralised form of government with popular voting by relatively poor people will not yield great enthusiasm for nature conservation for its own sake. A history of resource exploitation characterised by the siphoning of profits to outside parties does not help to generate support.

**Which way forward?**

A history of twenty five years of Man-and-Biosphere status did not bring Siberut a great deal of support for conserving the biodiversity and cultural diversity on the island. As stated above, the activities of UNESCO itself have always been rather limited due to lack of funding and other priorities. The Man-and-Biosphere label itself has also not been instrumental in generating support from other parties. Conservation efforts have in general been short lived, and sometimes they were even competing for support from the government or the local people. It is hard to predict whether under the present circumstances UNESCO will revitalise its activities in the near future. With the present form of government it is unlikely that large scale new conservation initiatives will be undertaking. The local situation is full of ambivalences and the various governmental initiatives at the district level are not sufficiently coherent to expect a major change. On the other hand one could argue that inspiring conservation leadership could make a difference in the years to come and in that sense UNESCO, as one of the few organisations in the world that takes the combination of cultural and biological diversity serious, has still a fascinating mission to fulfil on Siberut. Siberut, being a relatively small and insignificant island in terms of political complexity, compared to many other contested areas within the global MAB network (Hill 2005), is certainly still worth the effort.

Apart from having to come to terms with the ecological myth attached to indigenous communities, UNESCO also had to deal with the seriously altered lifestyle of local communities. Not only are indigenous lifestyles and knowledge systems for that matter under increasing pressure due to logging, resettlement projects and repressive political policies, indigenous peoples are also subject to mainstream education, westernisation, consumerism and the monetary economy brought at the doorstep by governmental development projects and Western tourists. Indigenous
peoples’ relation to these forms of modernity is heavily leaning on the level of exposure to modernity, for which counts that expectations and perceived needs increase when the level of exposure is intensified. It is no longer valid to perceive indigenous peoples as modernity’s other.

Decisive power, now partly in the hands of local communities, has blurred the premises – indigenous communities with intrinsically sustainable lifestyles living in precious forests endangered by logging instigated by exploitative governments – on which UNESCO is acting. Local communities earlier thought of as natural allies in UNESCO’s effort to save Siberut, now turn out to have profoundly altered lifestyles while some of them are deeply involved in logging operations on the island. And in addition, the district government is all but open and lacks willingness to cooperate with institutions like UNESCO. The district government even displays a certain unwillingness to share the newly gained decision making power with others. In several departments UNESCO is perceived of as an intruding chef in the just newly conquered kitchen.
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Samarai; photographing an island gem in the South Pacific in the early 20th C

Max Quanchi, QUT

The small island of Samarai lies nestled between the islands of Logea, Rogeia (Kwato) and Sideia (Sariba), to the south of Basilaki Island in the China Straits just of the mainland of New Guinea. It was extensively photographed after Europeans settled on the Papuan coast in the 1870s because it represented the best that European colonialism and acclimatization could offer - tranquil seascapes, busy ports, neat bungalows, tree-lined roads - and it was easily accessible on the merchant and tourist route from Australia, Torres Straits and Port Moresby through the China Straits to Rabaul and the Islands. By 1900, the China Straits were “a cosmopolitan highway” and Samarai the early “commercial capital of British New Guinea”. The anthropologist Malinowski, visiting in 1917, described the “pleasure of the landscape … everything immense, complicated, and yet absolutely harmonious and beautiful”. Samarai was a safe, solid, developed port in comparison to the muddy inlets of the Gulf, going ashore in lighters through the surf elsewhere along the coast, or disembarking into the dusty, brown ridges and scrub of Port Moresby. A picturesque tableaux of mountains, over-hanging jungle, protected bays and tiny islands, and Samarai’s smallness – a mere 24 hectares (50 acres) - added to its allure. In the 1880s and 1890s it was also the first sight of New Guinea for Australian miners arriving direct from Cooktown and Cairns and heading for the eastern goldfields. In 1897, around 500 miners landed at Samarai heading for Woodlark Island or the Mambare River and David Lewis accurately describes a photograph of the Samarai wharf area in 1905 as “evocative of other nineteenth century Pacific port towns”. Although Samarai’s importance faded as Port Moresby, Lae, Madang, Salamaua and Rabual became major centres, and German and Dutch shipping were curtailed by the war, it continued to be featured in travelogues, magazines and illustrated books on New Guinea well into the 1930s.

This paper blurs the lines between geographical imagination, landscape photography and the picturing of colonial space. Samarai was often referred to as marvellous and as Stephen Greenblatt noted “the marvellous is a central feature then in the whole complex system of representation, verbal and visual, philosophical and aesthetic, intellectual and emotional” though which people apprehended and possessed the desirable. To European readers looking out to the edge of the world in a relatively unknown New Guinea, Samarai appealed on all these grounds – and photography made it visual. This “visualisation” as Swartz and Ryan note, produces “places, cultural identities and social categories of race, gender and class”. The published photographs of Samarai, “socially constructed, culturally constituted and historically situated” offered access to, and created an image of a tropical, distant, colonial place. This paper suggests that contemporary book, magazine and postcard images of Samarai depicted the colonial presence that administrations wanted to create, the ports that shipping lines wanted to advertise, and the idyllic scenes that tourists wanted to find in the South Seas. The approach follows Schwartz and Ryan, who have argued that “photography remains a powerful tool in our engagement with the world around us” and that “through photographs we see, we remember, we imagine; we picture place”. In this case study, I want to show that photographs of Samarai specifically “represented the spaces, places and landscapes within their frame”, but also
projected and confirmed a more generalised and colonial imaging of Oceania as a region.

Very small islands historically have attracted the attention of explorers, artists, ethnographers and fiction writers, and now we should add, photographers. The small, single islands of Nauru, Ocean Island (Banaba) and Easter Island (Rapanui) have been extensively photographed, but it is the very small islets, cays and motu that frame the romantic and idyllic characteristic of the “South Seas”. The chiefly offshore island of Bua in Fiji, the former motu-uta in Papeete harbour, and various mushroom-shaped, wave-cut coral formations exposed on fringing reefs across the Pacific have appeared regularly as postcards and illustrations in published material. For example, the coral islet of Motu Uta (*L’Ilot de corail de Motu-Uta*) was photographed by Lucien Gauthier and made into a postcard in the early 20th century.

![Postcard, photographer Lucien Gauthier, Shekleton Collection, Noumea](image)

In Fiji, Bau’s chiefs, their houses and meeting areas, and churches, were also photographed extensively in the late 19th century, because Bau was the home of a powerful paramount chief, Ratu Seru Cakobau. It was never photographed from a distance, at sea level, and this is surprising given its symbolic importance and position off the mainland.

![Postcard, photographer unknown, Shekleton Collection, Noumea](image)
Bau, like Samarai, was a closely settled and reshaped site, and complex of buildings, houses, paths and views were regularly photographed, including interiors. For example, an interior photograph of Ratu Pope Cakobau and his wife Yadi Torika’s house on Bau appeared in books and was sold under “Fiji Government Copyright” as a postcard at the 1924 Wembley Exhibition in London.

Another Bau postcard labelled, “Chief’s house, Mbau” was captioned wrongly as it was the Navatanitawake Council House. This was not a dwelling but a chiefly meeting place or bure (meaning council house). Its double tier of stone walls and wooden walkway (renovated several times) feature in photographs from the 1870s through to the 1930s. Bau was the most photographed place outside Suva and Levuka, and postcard photographs over several decades now provide an amazing visual history of this important site. Samarai’s photographic archive has the same potential for creating a longitudinal visual history.

At Samarai in 1934, Edmond Demaitre asked a "remarkably attractive" tattooed girl for a photograph. She agreed saying "Not good here with boxes behind. Go where be palms. Me against tree. Photo plenty more pretty, I want one shilling". The willingness of Papuans to be photographed depended on the length of contact with Europeans and the size of the reward being offered, but is also an example of Papuan agency, manipulation and stage-management of Europeans. The identity of this girl remains a mystery. The original sixty Papuan inhabitants of Samarai were relocated when the site was developed as the main administration centre for eastern British New Guinea. She may have been from the nearby Milne Bay coast or Louisiade Archipelago as several Islanders moved to jobs in Samarai’s stores and hotels when the gold rush ended at Sudest.
Samarai Island, or Dinner Island as it was first known to Europeans after being named by John Moresby in 1873, changed ownership twice. First from the headman of nearby Logea Island, Dilomi, who sold it to the London Missionary Society (LMS) in 1878 so newly arriving LMS missionaries and Pacific Island pastors could establish their headquarters. It was then “swapped” between the LMS and the colonial administration in 1886 when the LMS moved to nearby Kwato Island, and Samarai, soon reverting to its indigenous name, became an administrative centre for British rule and quickly grew into a larger and more important commercial centre than Port Moresby. Although Dinner Island was known well enough to feature in two of the twenty photographs on New Guinea displayed in the Centennial International Exhibition in Melbourne in 1888, and be purchased in Melbourne studios as a set of five prints from Lindt’s *Picturesque New Guinea*, a visitor in 1890 described the swampy island as one of the unhealthiest spots in New Guinea. The seven-acre swamp was soon drained and terraces cut into the hill. In 1906, when the twenty-year old Flora Shaw Young arrived to take up a job in a hotel it was the “jewel of the Pacific” and the most “thriving township in Papua”. By 1915, a Resident Magistrates residence and a hospital sat on the central 40 metre rise and overlooked impressive private residences, the busy port, goal, Customs House, Bond Store, three hotels, churches, cricket pitch, trade stores, streets, a school, tennis courts, and frequently, photographers arriving on the wharf. By the turn of the century, a European population of 120, or 200 around Christmas, was surrounded by a visiting or temporary worker crowd of Papuan “Native Police”, indentured labourers, LMS converts and pastors, and local Daul language speakers. Streetscape photography of Samarai at the time, however, often showed deserted footpaths and roads as camera aperture times could not prevent blurring if people in the streets moved. A streetscape of Clunn’s store and hotel and the Cosmopolitan hotel was probably taken very early on a Sunday morning. To avoid blurring, a photograph of the wharf area in 1919, and another of Burns Philp’s huge warehouse taken in 1937 are similarly deserted, in contrast to the usual hustle of human activity when a ship was in port. Despite the presence of hundreds of alluvial miners as they passed through Samarai, called back for more supplies, made hospital visits, attended cricket matches or waited to hear of a new gold field opening, photographers ignored the miners and preferred individual and group portraits of officials, company men and respected suit-wearing members of the Samarai Chamber of Commerce. This reflected on the photographer, and therefore the reading audience’s, enthusiasm in celebrating late-nineteenth and early twentieth century order, progress and enterprise. Samarai looked like most colonial port towns and in photographs of taken between 1900 and 1930, there is often the sense that little distinguished it from other tropical European settlements in the Pacific, Australia or Africa.
Thomas McMahon, a freelance journalist from Townsville visited Samarai in 1915 and then published a series of photographs in the Cairns Post and Northern Herald in 1915-16, the Queenslander in 1916, Our Quarterly Magazine and Sunset in 1918 and the Illustrated London News in 1919. These were standard colonial propaganda images. One remarkable and rare interior photograph by McMahon showed the five metre high stacked shelves of the British New Guinea Company’s store, and another featured Clunn’s hotel, which had been shipped in sections from the Cooktown goldfields in north Queensland when the Sudest gold rush began in the Louisiade Archipelago to the southeast of Samarai in the late 1880s. Although there were several plantation developments on the mainland or on small islands within sight of Samarai, photographers preferred to focus on the “European-ness” of Samarai’s streets, hotels and wharves. Two of the published photographs from McMahon’s trip depicted Campbell’s walk, a paved tree-lined walkway around Samarai, which McMahon called a “promenade” and a “pretty walk”. There are 19 separate postcards of this pathway in the Shekleton Collection, which makes it the third most popular tourist image of Papua after the lakatoi (62 separate postcards) and the pile village of Hanuabada/Elevala near Port Moresby (40 postcards). It was also a popular book illustration, appearing as the frontispiece in AK Chignell’s Twentyone years in Papua, in Frank Burnett’s Through Polynesia and Papua (among six Samarai photographs including what he called “Crotons’s walk”) and as one of three picturesque Samarai photographs in Beatrice Grimshaw’s The New New Guinea.
McMahon and other photographers responded by providing images to disseminate to eager readers back home – a picturesque port bustling with Dutch, German and Australian cargo ships and passenger liners, a former swamp now drained, a landscape remade in the European manner with streets, a promenade, shops and double-storied banks and hotels – all evidence of the progress of European enterprise and administration.

Equipment, postcards, panorama and movie film

A number of Port Moresby and Samarai businesses were agents for Kodak. Whitten Brothers, CR Baldwin, the Papuan Times, the Papuan Courier and Loudon's Stores offered photographic supplies for sale up to 1930 and Robert Craig in Cairns also catered for Port Moresby camera enthusiasts. McMahon sent their travelling representative to Port Moresby in 1915 and the arrival of each steamer from Australian ports was eagerly welcomed as new supplies of film magazines, plates, chemicals and papers arrived to replace those that deteriorated in the hot and moist tropical conditions or had been damaged by inadequate storage and lack of protection from insects. In 1889, the first year that imports of photographic equipment was recorded, one package of photographic supplies worth three pounds entered Port Moresby. Within ten years photographic equipment worth one hundred and four pounds was entering Port Moresby, Samarai and Daru. This figure was for commercially available photographic material sold on the retail market. The value of equipment and materials carried into Papua by officials and travellers as personal or expedition luggage would have multiplied this figure considerably.
Party of photographers at Samarai; Photographed by the missionary, AK Chignell; n.d.; LH Sharp, Album, Mitchell Library, Sydney.

In postcards of Papua, excluding Mission activities, mining, plantations, post offices, hotels and urban street scenes, comprised roughly 26.9% of all images. This suggests that for distant viewing audiences, establishing a visual record of European colonial achievement, administrative roles and potential economic development was significant. Depicting activities that a tourist might enjoy on the frontier was not a priority in pre-1940 postcards. Only a few postcards depict actual tourist activities, such as walking along a trail, standing by waterfalls or posing with children and dancers (1.4% of all cards). There are images of Papua New Guineans trading from canoes alongside ships and tourism is rather well represented when postcards of ships at anchor, wharves, harbours and towns (8.3% of all cards) and scenic/picturesque cards (7.6% of all postcards) are included in this category. This places tourism, with 17.3% of all postcards, as the third most popular images after ethnographic subject matter and images related to administration, infrastructure and economic development. That travelling was a search for the familiar, was shown by the popularity of tidy street scenes, grand government buildings, well established plantation residences and aesthetic views such as Samarai’s well kept, shady, round-the-island “Campbell’s walk”.

The trader George Macdonald at Samarai and later at Salamaua offered a postcard series that was numbered to five hundred and sixty-two postcards. One of Macdonald’s advertisements, stamped on the back of a postcard of “three old women holding skulls,” noted that his series “numbers several hundred pictures portraying life and work in the territory; descriptive catalogue on application” and that photographs were available for reproduction if permission was sought. Other postcards were available from Whitten Brothers at Samarai and Archie and Kathleen Gibson at their Port Moresby photography business.

The panorama could produce remarkable results. For example, a presentation album of the 1884 Proclamation expedition, now held at Cambridge University, includes a two-print panorama of Port Moresby taken from the mission station. AP Goodwin pasted two prints together to make a panorama of Mount Owen Stanley, the target for William MacGregor’s patrol in June 1889 and Harry Downing pasted together panoramas of Bululo Gorge and Rabual harbour. Patrol Officer NG Imlay created five panoramas of Port Moresby and Samarai (9cm by 40cm) and Archie Gibson six of similar size for Port Moresby. At the same time Gibson, a keen still photographer, had experimented with "home movies" and in February 1929, Port Moresby residents saw themselves for the first time as a moving image. Shortly afterwards a visiting party of
cinematographers filmed the opening of the Samarai War Memorial Hall and this was screened at Samarai and Port Moresby. A third special screening followed at “Ryans Hotel and Picture Theatre” in Port Moresby in September with additional footage taken by Gibson during the Australian Governor-General’s brief visit to the Territory.35

Illustrated books and magazines

In the illustrated magazine boom at the turn of the century, Samarai was a popular subject, or site. In 1911, the magazine, The Miner, published an illustrated story on “Mining in New Guinea” and Samarai featured among the five accompanying photographs.36 Readers were mislead in 1913 in Empire Magazine when it wrongly captioned a photograph of Elevala near Port Moresby, as “Samarai; the commercial centre of Papua”.37 But there was no doubting Samarai’s prosperity in 1916 when the opening photographs of the British New Guinea section of Australia unlimited were of a small fleet nestled under Samarai’s sheltering shore and a group of well-to-do expatriates lounging on the veranda of their Samarai home.38 Readers were told “The beautiful island of Samarai is the base of an archipelago of great tropical beauty extending eastward to the Louisiades”.39 In the 1930s, visual interest shifted to the newly-mapped highlands, economic development and the major European centres of Port Moresby, Rabaul, Lae and Madang, and even more so on ethnographic photography. Portraits, villages, costumed warriors and vine bridges – knowing the “native” – had more reader appeal than the quiet port towns that had become backwaters in terms of trade, tourism and administration.

Official publications such as the official Papuan Handbook in 1909 contained a photograph of a street scene in Samarai among its 22 illustrations and this was repeated in the 1912 Handbook.40 The handbook was published in 1907, 1909, 1912 and 1927. Samarai was not included in the 1927 edition. In illustrated travel books a photograph of Samarai was nearly always included. Burns Philp’s Handbook of information for the Western Pacific Islands in 1899 featured five pages on Samarai, reflecting its importance on the main sea route to New Guinea.41 Samarai continued to feature in BPs (Burns Philp) travel promotion material, such as All about BP and Company Ltd in 1903. Of 82 photographs, 18 were on Papua including a photograph of the main street of Samarai with the comment, “Samarai settlement is the only really busy spot in British New Guinea”.42 In Picturesque Isles of the South Seas in 192043 Burns Philp’s readers were told that “New Guinea is a vast treasure trove for the visitor possessed with an inclination for research or to collect and photograph”. Samarai was therefore not only a place in Papua, and a spot to visit, but was picturesque and could easily be photographed – on the next BP’s voyage to the islands.44 The opening photograph in 1909 in the illustrated booklet, Papua the marvellous; the country of chances, was “On the coral shore; Samarai”45 leaving no doubt in readers minds that, from the perspective of Campbell’s walk, Papua was indeed a tropical paradise. Samarai appeared twice in another boosting-type publication, Papua; a grandchild of the empire in 1912.46 AS Meek’s A naturalist in cannibal land in 1913 opened with five photographs of Samarai,47 and in 1914, Samarai featured twice in Mary Hall’s A woman in the antipodes,48 and in several more books published in the 1920s.49

The decline of popular interest
In 1919, there were 293 Europeans living on Samarai, but it rapidly declined in importance, and therefore lost its appeal to photographers. In 1936, when WC Groves visited it was still “beautiful little Samarai with mixed population of Europeans and fuzzy-headed natives, her trim bungalows set on the green hillside facing the harbour with its fleet of pearling and trading schooners”. The accompanying photograph was a classic South Seas’ romantic composition – Campbell’s Walk and overhanging palms in the foreground and a passenger liner off-shore. Two years later, Samarai had disappeared from Burns Philp travel advertisements. BPs now offered “By way of … Salamaua and Rabaul. Romantic South Sea Islands, palm fringed shores …”. Three years later Samarai was destroyed by bombing during the Pacific war, and after the war it declined further when Alotau became the district centre, utilising the wartime airstrip at Milne Bay. Samarai was now no longer in the photographer’s lens, and other forms of visualization were developed. Samarai was no longer an idyllic, island gem. It was no longer constructed as a place that attracted the European reader’s imagination.

3. Bronislaw Malinowski, *A diary in the strict sense of the word* (New York 1967), 44-5 and 112. He noted that despite the picturesque qualities, the European lifestyle was “wretched”.
6. David Lewis, *The plantation dream; developing British New Guinea and Papua 1884-1942* (Canberra 1996) between 126 and 127. The cover of Lewis’s book, the wharf area in 1927, is another example of an evocative, photographic, port town.
7. Before the war Hubert Murray, the Lt Governor of Papua, noted complaints that Samarai’s wharves were falling into disrepair and need upgrading; Francis West, *Hubert Murray; the Australian Proconsul*, (Melbourne 1968), 138 and 190, and 244. Murray complained in 1925 that a lack of shipping was slowing development. JHP Murray, *Papua of Today*, (London 1925), 142.
10. Schwartz and Ryan *Picturing place*, 1.
14. Port Moresby, Rigo and Samarai were the first three districts to be established with a Resident Magistrate. By the end of the MacGrgeor era there were six – following the establishment of Mambare, Nivani and Daru. David Wetherell, “Accounts of fighting and cannibalism in Eastern New Guinea during the missionary contact period 1877-1888 as told to Charles Abel”, *Pacific Studies*, 26, 1/2, 38 and 40; Francis West, *Hubert Murray*, 147.
15 In “Class 12 Photographic Proofs, etc”; Anon, Catalogue of the exhibits in the New South Wales Court, Centennial International Exhibition, Melbourne 1888.
16 Prints 111 to 115, in a Melbourne catalogue of 124 prints for sale from JW Lindt’s Picturesque New Guinea. (Held at the Bishop Museum, 1964.280.07, Honolulu, Hawaii.)
17 WD Pitcairn, Two years among the savages of New Guinea (London 1897) 47.
18 Jan Roberts, Voices from a lost world, 50.
19 Lewis, Plantation Dream, 265.
20 Reproduced in Wetherell, Charles Abel, between 68-69.
21 For an “aerial” photograph, possibly taken from a ship’s masthead, “View of the island of Samarai,” see Jan Roberts, Voices in a lost world, (Alexandria, NSW 1996) 79. This photograph is reproduced in Gash and Whittaker, A Pictorial history of New Guinea, (Brisbane 1975), p.198. Roberts cites the Bunting collection as the source, and Gash and Whittaker the Stephenson collection, demonstrating the wide dissemination of prints among travellers, collectors and editors.
22 David Lewis, Plantation dream, 26 and 36-37 and 91-92.
23 Cairns Post and Northern Herald, 23.12.1916, 26; Our Quarterly Magazine, Aug 1918, 7.
25 AK Chignell, Twentyone years in Papua, (London 1913), frontispiece. The photographer was the missionary, PJ Money.
26 Frank Burnett, Through Polynesia and Papua, (London 1911) 148, 149, 157, 160 and 176. Burnett’s spelling of “Samurai” was inaccurate, or perhaps an editor’s mistake.
27 Beatrice Grimshaw, The new New Guinea, (London 1910), 258, 260 and 274. A second edition was released the following year in 1911.
28 Whitten Brothers first advertisement had the word "Photograph" in bold print see, Papuan Times, 10/11/1915. Baldwin’s store began advertising photography supplies in 1918 see, Papuan Courier, 6/12/1918. For Robert Craig of Cairns see, Papuan Courier, 30/1/1920 and for Loudon's Stores see, Papuan Courier, 21/5/1926.
29 Port Moresby residents were advised to inspect Mr JA Taylor’s samples of the “latest in cameras”, Papuan Courier, 18/8/1915. His visit was overshadowed by the presence in Papua of Thomas McMahon who was traveling around the Territory gathering material for a series of articles. For shipping notes on photographic supplies see, Papuan Courier, 7/11/1919 and 5/3/1920.
30 Imports peaked in 1906 when 123 packages of photographic materials to the value of 350 pounds were recorded. British New Guinea Annual Report, 1888-1899 and 1905-1906.
31 An exception is a tourist/collector set of fifteen sepia cards captioned ‘Manus Island’. 28% of the cards in this series feature waterfalls, sunrises and alligators (sic); Shekleton Collection, Noumea. Many of the captions and locations are incorrect and misleading.
32 The European constructed, tree lined and gravelled road was a popular colonial symbol. Examples of this photographic iconography can be found in postcards from African, Asia and Pacific colonial territories. The colonial road
signified successful development and ‘penetration’ of the landscape well into the 20th century.

For Macdonald’s advertisement and eight other postcards see Leahy M, 1930-1934, “Print Collection”, PRI055845 and PRI055846-850(e), Royal Geographical Society, London.


Papuan Courier, 8/2/1929, 2/7/1929 and 6/9/1929.


Oliver Bainbridge, “The land of the bird of paradise”, Empire Review, April 1913. (no pagination)

Edwin Brady, Australia unlimited, (Melbourne c1916) 786 and 787.

Ibid., 790.

Handbook of the Territory of Papua, compiled by H Staniforth Smith, (Melbourne 1909).

Anon, (Burns Philp) Handbook of information for the Western Pacific Islands (Sydney 1899). It had 112 pages and 43 illustrations.

Anon, (Burns Philp), All about BP and Company (Sydney 1903), 92 and passim 77-95.

Anon, (Burns Philp), Picturesque Isles of the South Seas (Sydney 1920). RA Christie was attributed as the Samarai photographer.

Anon, (Burns Philp), All about BP and Company (Sydney 1903), 92

Anon, Papua the marvellous; the country of chances, Melbourne c1909, 14.

This was a small booklet of 52 pages and 10 photographs, boosting the economic opportunities for Australian settlers and investors. The photographs highlighted harbours, labourers, sisal and rubber plantations.

Gordon Inglis, Papua; a grandchild of the empire (London 1912), 21 and 29.

There were 16 black and white plates in this 45 page booklet.

AS Meek, A naturalist in cannibal land, (London 1913), 44, 45, 46, 48,195 and 196.

Mary Hall, A woman in the antipodes (London 1914), 223.

H Murray, Papua of today (London 1925), 132; MGCP, (anon), Rambles in Papua, (Sydney 1926); AJ Keelaw, In the land of the Dohori (Sydney 1929), 53;


“Typical Samarai scene with a cruising liner in the background”, Ibid., 32 (the photographer was not identified)

Advertisement, Walkabout, June 1938, 11.
Tsunami : Habitat, Economy and Social Spheres of Car Nicobarese

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Abstract
Though the Car Nicobar Island was least affected among the Nicobar group of Islands by the dreaded Tsunami waves and high intensity of tremor, but each and every individual bore the brunt of it directly or indirectly. The destruction of horticulture garden along with its land and plantation with their product as well as human life was not repairable immediately. The loss of life particularly of children and women, who were suffered more, will have long-term effect on its working force, which directly influences their economy. But the Nicobari society is so well knit that it may be able to accommodate all its members beyond family and village even inter islands.

Traditionally they are horticulturist and still it is the major economy of the Island. The tu-het is the important social unit and very much close to large extended joint family with land holding right, its significance is the socio-economic integrity of its members and its characteristics feature is unity, fraternity and sense of belongingness. No individual has the right to alienate any portion of it.

The Nicobarese habitat mainly comprising of land, forest, sea and its influence is reflected in every aspects of culture. The traditional economy can be broadly categorized as: horticulture, herding, fishing and hunting. After devastation, they are still getting relief measures, which may influence their life style also. Considering the life and culture of Car Nicobarese before and after tsunami, here it is tried to see the impact of tsunami in the habitat, economy and social spheres.

Key Words: tsunami, Car Nicobarese, tu-het, economy, horticulture, impact, relief
Introduction:

The millennium Sunrise at Katchal brought Nicobar Islands in news in recent times. These are the one of the beautiful Islands of the world inhabited by mongoloid stock of people called Nicobarese and Shompen. The Shompen are a primitive tribal group with a population of few hundreds confined themselves in Great Nicobar Island only with foraging economy, while Nicobarese were a larger group well adapted themselves with the change of time and adjusting with their traditional way of life to modern changing winds. Nicobarese are a community self sufficient within themselves with well advanced traditional knowledge of resource managements and great heritage of cultural enrichment. The devastated tsunami and tremor which struck the Islands on the first morning of 26-12-2004, shattered the Islands and caused damage in every sphere of the Islands, considering the life and culture of Car Nicobarese before and after tsunami, the present study endeavours to assess the impact of tsunami in the habitat, economy and social spheres.

Area and People

The Nicobar Islands are Located some 1200 km away from the east coast of Indian mainland and situated in the southernmost portion of the Bay of Bengal of the Indian Ocean. These Islands are part of the larger Andaman and Nicobar archipelago, forming a chain of 850 km long north-to-south in the Bay of Bengal and extends to the south up to a point about 150 kilometer west of the Achin Head in Sumatra. Its location ranges from 6° and 10°N latitude and the meridians of 89° to 94°E longitude. The archipelago is consists of 319 Islands and only 22 come under the Nicobar group and 12 were only inhabited. The northernmost Island of the Nicobar group of Islands is Car Nicobar which is about 75 miles south of Little Andaman Island, and stretches between the 92° 42’ 15” to 92° 50’ 52” E longitude and 9° 17’ 48” N latitude.

The name “Pu” was given for Car Nicobar by the natives. In Comparison to other Islands of the group, Car Nicobar has almost flat land, except some small cliffs in its north and some small hilly areas in the interiors. The aggregate land area of the Nicobar group of Islands is 1647.11 square kilometer and Car Nicobar has only a share of below 8%, which is only 126.90 square kilometer. About 2/3 of the Nicobarese population were concentrated in Car Nicobar and population density is highest. The People are speaking an Austro-Asiatic sub family of language (Das, 1977; Ganguly, 1976; SyamChaudhury, 1977; Justin 1990). Car Nicobar have a tropical climate: it is hot and humid throughout the year. The range of average annual variation of minimum and maximum temperature is very low about 10 degree of Foreign height scale, between 78.6°F and 86.6°F with an annual average of about 247 cm rainfall.
Settlement and Land Use Pattern:

The island is roughly an oval shape, with a tapering projection on the northeast. All around, a sandy beach gradually reaching up the sea skirts it. The coastline is not very high above the level of the sea, the average elevation being 2.75 meters. Most of the villages of Car Nicobar are situated on the eastern coast.

The ecology has largely determined the settlement pattern of the village. On the either side of dwelling area, the limits of the village lands converge towards the center of the Islands. Settlement and land use patterns of Car Nicobar is well documented and described by Syamchaudhuri (1977) and only relevant portion is mentioned here: “The common shape that emerge out for every village can be graphically represented in a triangle since the island is roughly oval.”
“Thus, the fourteen villages are so divided that each of them, large or small, has within its, limit almost all kinds of lands for socio-economic use. The el-panam is the coastal area where a big house (pati) is built on a platform supported by slits overlooking the sea and it is mainly used as a place of social assembly and entertainment on occasions of festivals and social gathering. For the canoes especially racing one this village house serves as the beacon. The pati of the el-panam is the biggest house in the whole village and regarded as the forward area of the village.

There are other houses in the el-panam, used for confinement of expectant mothers where their babies should born. Such a house, called pati-yongni (house of mother having babies), is used by a pregnant woman and husband, after delivery the couple may live there for a period of six months. The burial ground is situated near the birth houses. When death occur the corpse is carried to the el-panam and rested in one of these houses till preparations of burial are completed. Sometimes a dying person is carried to the el-panam in anticipation that death might occur in the proper place since birth and death are unclean affairs for the Nicobarese.

“Inward from the coast, beyond the el-panam begins the dwelling area, where living houses are clustered in groups, often interspersed within coconut groves in such a way that more than one homestead may not come within sight simultaneously. Every household in the village has its own homestead area. The entire arena including the main house and its subsidiaries constitute a tu-het or homestead. The site is always kept clean and clear although small kitchen gardens and banana groves are often grown near about. If the land is found suitable coco-palms are grown all over the places intervening several homestead”. Commonly in all homestead small sheds or enclosures are provided for poultry and pigs. Though pigs are raised in the interior areas, some are kept in tu-het which will be killed on the occasion of special feasts.

Living houses are also built beyond the tu-het area, in extensive coconut plantations, which is known as tu-long. This area gradually merges into the inner forest known as ta-vat where Areca, palms and pandanus abound towards its inner region. Though the lateral village boundaries converge towards the central region and relatively the area of ta-vat is not less than that of tu-long, meaning of jungle. The inner parts of tu-long and woodland are mainly reserved for gardening.

Some houses are built in ta-vat and tu-long areas for the watch and maintenance of gardens and the number of house and residents were determined by the economic needs of the households. Villages have subsidiary settlements also, though these are small separate villages but having no ecological division like their parents villages.

“The el panam and tu-het areas are the most frequented parts of the village because the bulk of the population live near the coast. These two areas could be
distinguished quite clearly as one would easily find out how the ecological scene transform when the el-panam merge into the living area.”
(The Social Structure of Car Nicobar Islands by N.K. Syamchaudhuri, 1977 pp-38-40).”

The villages have almost same pattern and within the specific limit it is bound to share patches of lands to all villagers for all purposes. Still villages in Car Nicobar have same land use patterns.

The society is dynamic one, which reflects as the replacement of house type from beehive type to rectangular shape, which regarded as new innovation at that time (Syamchaudhuri, 1977), and during these changing time almost beehive house is replaced. They are using other materials for construction of houses for different purpose but still preference is for traditional raw materials, as these materials are best suited to the environment.

Social Organization

The lineage (tu-het) is very important social unit of Car Nicobarese. The significance of tu-het indicates the socio-economic integrity of its member. According to tu-hets norm, the members have no individual ownership. Whatever is available resources, is a possession of the tuhet as a whole. Theirs is a well-knit society having no distinction of class and creed. Neither is there any discrimination on the basis of sex. The tu-het or large joint family is most prevalent in Car Nicobar. There is no hard and fast rule concerning inheritance of property. All members of a tu-het and family (both male and female) have rights over the tu-het’s property. However the property remains under the control of the tu-het and family head. Politically the society is well organized and almost captain (headman) is respected and the community members followed his advice and decisions, as well as he gets all cooperation from the community.

Economy

Land, forest and sea form the major economic resources; they are a land-owning community, with land being distributed to tu-hets and families. But now each family of the tu-het have land of their own where coconut and areca nut are cultivated. Apart from horticultural activities, the Nicobarese engage in fishing, making baskets, mats, wooden iron spears and repairing canoes, rearing pigs and fouls. There is a sizeable number of Nicobarese have white-collar jobs. Some have opened petty shops, while others follow traditional economic pursuits. But still horticulture is the major economy. The resource mapping showed quite sustainable (Chauhan et.al, 2004).

Food Habits

The food habits of the Nicobarese, especially at Car Nicobar have undergone tremendous change, but the traditional food is even a major part of their daily diets. Among the traditional foods yam, pandanus, banana, tapioca, coconut and other wild fruits, roots and tubers are taken. They eat fish mostly marine, beef, pork and chicken. Among the marine resources, the crabs, lobster, prawn, turtle are mostly used whereas the octopus and sea cucumber is used mostly when fishes are not
available. Many varieties of birds like, kaloh, Maku-ko, Kavov are consumed. Among the reptiles, Pythons and Iguana are also delicacy.

Toddy (coconut) is prepared and liked; it is a part of their diet. Other fermented liquor is also used but it is restricted. Water of tender coconut, processed and lemon juice with sugar and water, tea with milk is liked very much (Justin, 1990). They smoke yong pop (loose tobacco rolled or wrapped in pandanus leaf), cigarette and bidis also. Chewing tobacco with lime is also seen frequently. They are also using betel nut alone or along with Pan, Zarda and lime.

In recent time all modern kind of food are more or less available. Rice, pulses, vegetables are also the items of their food. They are consuming both leafy and non-leafy vegetables, grown as well as purchased one. Now -a- days rice is staple food for them. Still today, most of the people prefer coconut oil as a cooking medium. The dietary investigations suggest that their diet is adequate and nutritionally satisfactory, it is remarkably rich in animal protein (103 gm per consumption unit daily) and high in fat content (Roy & Roy, 1967) But at present carbohydrate and fat content increased due to changing food habits, which reflects in their body dimension as increasing obesity (Sahani, 2004).

Population:
The population is increasing one, table-1 gives the population figure of Car Nicobar in 1961 and afterwards. It was lowest in Kinmai village having of only 426 souls whereas Sawai including Tee-top have maximum population of 1053 only. Females were outnumbering males showing sex ratio of 1016. The census report shows that population are increasing gradually, and the population figure was 20292 according to 2001 Census. Sex ratio over time period showed decreasing trend, in the year 1961 it varied between 828 (Kinmai) to 1445( Jayanti) with a ratio of 1015 of total population which reduced to 906 in the year 2001.

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<th>Village names adopted</th>
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<th>Males</th>
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<td>514(994)</td>
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</tr>
<tr>
<td>Kinmai Totchak</td>
<td></td>
<td>233(403)</td>
<td>193(378)</td>
<td>426(781)</td>
</tr>
<tr>
<td>Small Lapathy Poncho</td>
<td></td>
<td>340(530)</td>
<td>296(463)</td>
<td>636(991)</td>
</tr>
<tr>
<td>Tapoiming Hongchu</td>
<td></td>
<td>229(450)</td>
<td>213(432)</td>
<td>442(882)</td>
</tr>
<tr>
<td>Big Lapathy Seti</td>
<td></td>
<td>236(576)</td>
<td>341(501)</td>
<td>577(1077)</td>
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<tr>
<td>Chockchuachia (Chuk-chu-cha) Pompai</td>
<td></td>
<td>331(688)</td>
<td>312(671)</td>
<td>643(1389)</td>
</tr>
<tr>
<td>Kenyuka Saraki</td>
<td></td>
<td>320(   )</td>
<td>297(   )</td>
<td>617(1039)</td>
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<tr>
<td>Tamalu Timlo</td>
<td></td>
<td>458(   )</td>
<td>431(   )</td>
<td>889(1603)</td>
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<td>Perka Keero</td>
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<td>499(952 )</td>
<td>959(1897 )</td>
</tr>
<tr>
<td>Malacca Ureka</td>
<td></td>
<td>389(   )</td>
<td>400(   )</td>
<td>789(1540 )</td>
</tr>
<tr>
<td>Kakana Sapaha</td>
<td></td>
<td>248(497 )</td>
<td>390(407 )</td>
<td>638(904 )</td>
</tr>
<tr>
<td>Kimious Otrahoon</td>
<td></td>
<td>254(278 )</td>
<td>241(188 )</td>
<td>495(466 )</td>
</tr>
<tr>
<td>Arong Haran</td>
<td></td>
<td>292(426 )</td>
<td>280(379 )</td>
<td>572(805 )</td>
</tr>
<tr>
<td>Sawai + (Tee-top) Otkasip</td>
<td></td>
<td>517(   )</td>
<td>536(   )</td>
<td>1053(1910 )</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>4821(   )</td>
<td>4896(   )</td>
<td>9717(16290 )</td>
</tr>
</tbody>
</table>

Census year 1971 12,338
Census year 1981 15486
Tsunami and Car Nicobar Island

The tremor followed by tsunami waves affected the Car Nicobar Islands in each and every sphere of the Islanders.

Impact upon the Population

Comparatively loss of lives of the Car Nicobarese are less and total loss of life were around 745 (below 5%) souls including the death taken at other places but it was 484 (19.64%) for the worst affected three villages and among them highest death of 279 (37.44%) in Kimious village. It is worth mentioning here that the impact on that particular village is so much that their male population are mere 24 souls more than the population of 1961 whereas females were less than 153 souls ( reduced to above 60%). The females and children were the most victim of the disaster. The impact is seen clearly from the low sex and dependency ratio after tsunami, the pre tsunami sex ratio was 718, 843 and 946 respectively for the villages of Kimious, Kakana and Arong, whereas it reduced to 676, 819 and 890 after tsunami and it is 887 for the whole population of Car Nicobar. The dependency ratio showed that it reduced significantly in Kimious village from 36.2 to 26.3, whereas for Kakana and Arong it reduces below 4 points only, but the less affected villages have the ratio between 38.39 to 51.94, whereas in total it is 42.37. Since, preference of marriage is within the village it may affect the marriage pattern and mate problem in future, though inter village and inter Island marriage alliances is also practiced.

<table>
<thead>
<tr>
<th>Age group</th>
<th>Kimious</th>
<th>Kakana</th>
<th>Arong</th>
<th>Total</th>
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<tbody>
<tr>
<td>0-1</td>
<td>5</td>
<td>6</td>
<td>3</td>
<td>1</td>
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<td>1-5</td>
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<td>8</td>
<td>15</td>
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<tr>
<td>6-10</td>
<td>15</td>
<td>15</td>
<td>2</td>
<td>2</td>
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<tr>
<td>11-15</td>
<td>6</td>
<td>14</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>16-20</td>
<td>11</td>
<td>26</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>21-25</td>
<td>3</td>
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<td>0</td>
<td>3</td>
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<tr>
<td>26-60</td>
<td>31</td>
<td>97</td>
<td>12</td>
<td>34</td>
</tr>
<tr>
<td>60+</td>
<td>5</td>
<td>3</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>86</td>
<td>193</td>
<td>34</td>
<td>67</td>
</tr>
<tr>
<td>M+F</td>
<td>279</td>
<td>101</td>
<td>104</td>
<td>484</td>
</tr>
</tbody>
</table>
Abbreviations: Kin= Kinmai, La = Small Lapathy, A= Arong, J= Jayanti, Te= Tee-top, Ch= Chuk-chu-cha, Kim= Kimious, Ka= Kakana, P= Perka, Mu= Mus, To= Total, F=female, M= male, D= dead, S= survier, Bts= before tsunami, Ats= after tsunami

Loss/damage of Property and Resources

Car Nicobarese suffered a great loss of their property both movable and immovable as well as other resources and culturally significant objects and culturally important person also. The settlement area was almost devastated, which is shown in map as red-bordered line. The five villages have lost houses and all belongings, where partial damage of it was from other villages. Where tsunami was not able to reach, damage of houses was also reported due to tremor. The plantation, kitchen garden as well as places for rearing pig and poultry with its contents near sea-shore almost totally damaged and make land unsuitable for plantation purpose at least for few years. But in the interior plantation were not affected and their major resources were not shattered badly.

The conversion of Nicobarese to Christinity was geared up in sixties and it is almost dominating but they are still practising the tradition and trying to manifest the same through Christianity also. Though, they lost cultural significant objects as well as specialist, but it is not so significant to exert its affect at this moment, but in due course may be.

Impact on Health, Hygiene and Related Problem

In comparison to old settlement area just after tsunami the dwelling spaces became very limited as well as not hygienic also, since it is mostly of tents. Though sporadic outburst of some contagious diseases were reported but controlled by the Government and other agency with the active participation of the community. Initially, they were totally dependent on the relief materials for food and other necessities as a result their normal dietary habits were disturbed, specially fish, poultry and pork were became less in this time. Now gradually it is going towards the normal.

Interplay of Social Dynamics to Cope Tsunami
They are concentrating themselves for resettlement in first stage as temporary settlement and then final resettlements. The community decided to not observe any kind of rites and likewise all the rituals and feasts are banned for time being as they will exhaust their resources and times, which affect the rehabilitation work. Traditional sports like canoe race, pig fight and other recreational activities are postponed for time being but started after one year of the disaster. To divert the attention of survived children, keeping them engage in school. Though, immediately after tsunami a very few cases of fear psychosis were reported, but it was normal within few days even not a single individuals were reported as facing any psychological trauma or stress of tsunami.

It is in Nicobari tradition that if the resources of the households or tu-het were not sufficient to full fills their demands, they borrowed from other household or tu-hets, it is not necessary to immediately return the borrowed items to the givers. But, when the borrower will be in the position to pay back, and the givers will need the items, then givers will take back from them. But mostly garden produce and animals were exchanged. The tu-hets and villages already started negotiations in their Island council regarding the use of resources so that the affluent may give the needy some of their plantation for time being so that they can easily get their subsistence. After some time when they attain self-sufficiency in raising their own plantation the borrowed trees will be return to the donors. It is not necessary to repay what he consumed during this lean period. At the time of urgency or need he can exchange services or material in return also. The affected tu-hets having shortage of manpower, even, will adopt people from other tu-hets for the utilization of manpower in resettlement process. It is also customary to provide manpower during house building, gardening and other works and vice versa. Even some tu-hets already made proposal of adoption of young people to supplement the tu-het manpower requirements for the utilization in resettlement process.

At this moment due to limitation of space, time, and scarcity of raw materials, foremost importance is given to construction of temporary settlement in new location. But in their notional map of new settlement they clearly demarcated the markings for rebuilding of traditional structures, playground along with their homestead. But change of location (from sand floor to marshy type loamy floor) might have long-term repercussions on health and hygiene.

Caring of members:

According to tradition adoptions in childhood and after marriage by other family are important social aspects of Nicobari society. In the post tsunami scenario, those children who lost their parents and guardians are already adopted by their kith and kin and the tu-het. The other old members were also accommodated like wise.

The compensation @ Rs. 2,00000/- per dead or missing person to the kins, really, it is suddenly pouring of money and they start spending the same lavish to luxury items mostly for purchasing cell phone, motorbike etc. which brings suddenly abrupt occurred situation also. Those who are not getting the same are mentally upset to some extent but also enjoying. The glance of dead or missing list
shows that Kimious village will get nearly 60 million followed by Arong and Kakana above 20 million Rupees. Others are also getting compensation for other losses. At present Govt. are taken steps so that they cannot get money at a time more to prevent the misuse.

Though Govt. are still providing ration to the people but the positive thinking noticed during our study that some people did not prefer to take free dolls; they were eagerly waiting for normal transaction so that they can sell their garden produce and will procure their requirements from the market. Most of the people also think that for any government it is not possible to provide all helps to each and every individual, so they also try to solve their problem by themselves. But some of the individuals also required long term aid since their plantation were almost damaged and they are also getting it as a compensation of lost property.

Conclusion:

The impact of tsunami among the society is so that it changed the traditional land use pattern and in future may also affect the resource utilization at least for future coming few years and may be it continue. Though, the Nicobari society is so closely knit and accommodative and ability to adjust with the coming of new situation, so they may stand very close to their traditional way of life after the resettlements in new locations. But, definitely the imposed factors, if any also will play its role.

The categorization of the survivors were done like orphan, widow, destitute etc. for providing aid. But the society has no such terms and it has so strong affiliation to their members that this type of the categorization will have bad impact in coming future moreover where money is playing role. They have no concept of orphan and destitute, so after bringing to the notice of the officer, it was stopped. The society is so much accommodative to accept the women with her child even without proper marriages, and they get equal treatment in social affairs.

The idea of concrete houses are discouraged by elder persons keeping in mind the frequent earthquakes that rock their land as well as the climatic condition. But some of the community leaders and well-off people also want concrete type of houses at least one for their joint family, not for dwelling rather than for use of it as a guest room. When they were briefed about the merits and demerits of the concrete house, then almost each and every person were willing to construct their traditional house type and already started to construct with the available raw materials, but since it is provided free of cost, so one of the concrete house is also not bad for each family, which will be used for other social and cultural purposes. They also construct the traditional house as a model house for temporary settlement, which was even appreciated by the head of the Government of the Islands.

The Nicobar situation is unique in coping with any disaster unlike mainland Indian scenario. Moreover, the social system and self-sufficiency of the community will give them extra strength to cope with any coming situations. However, while settling them care ought to be taken so that their traditional systems will be as much as less affected and the agencies involved in resettlement also trying to consider the same. The community is also trying to keep their cultural identity.
References:


Off the deep southeast, of the long stretched eastern coast of the Indian peninsula, between Sumatra and the Andaman Islands in the Bay of Bengal, lies a chain of twelve inhabited and seven uninhabited islands, known as the Nicobar Archipelago. The inhabited islands are, Car Nicobar, Chowra, Teressa, Bompoka, Nancowrie, Kamorta, Trinket, Katchall, Great Nicobar, Little Nicobar, Pulomilo, and Kondul; and the uninhabited islands are, Tillanchong, Battimalve, Menchal, Taraik, Tries, Miroe, and Kabra. Geographically, the Nicobar Archipelago could be divided into three zones, viz., the Northern, the Central, and the Southern. The northern zone consists of Car Nicobar only; the central zone consists of Teressa, Bompoka, Chowra, Katchall, Kamorta, Nancowrie and Trinket; and the southern zone comprises the islands of Little Nicobar, Great Nicobar, Pulomilo, and Kondul. Linguistically, Nicobarese dialects are from Mon Khmer speech family; five different dialects are spoken there. Car Nicobarese have a separate dialect, people of Teressa and Bompoka speak one dialect, Chowrians speak a separate dialect, the people of Kamorta, Katchall, Nancowrie and Trinket speak one dialect, and people of Great and Little Nicobar, Kondul, and Pulomilo speak a separate dialect. Culturally, however, we can divide the Nicobarese into four groups. Car Nicobar has a distinct culture; Teressa and Bompoka have common cultural traditions; Chowra has a very distinct culture; people of Kamorta, Katchall, Nancowrie, and Trinket share common cultural traditions; and similarly, people of Great and Little Nicobar, Kondul and Pulomilo have common cultural traditions.

The paper is based upon empirical study of interaction between two islands of the Nicobar Archipelago in the Bay of Bengal, viz., the Chowra and the Teressa. The data for this paper were collected during the two courses of fieldworks conducted by the author over a period of twenty-seven years, first, during 1974-75, and secondly, during May-June 2002. During the first phase of fieldwork, the author was a young researcher, and during the second phase, a matured and a professional anthropologist. Out of twelve inhabited islands of various sizes, Chowra and Teressa comprise 2.8 and 27.3 square kilometers of areas, respectively. Both are separated with each other by 14 nautical miles. Despite living in proximity, and interacting at the economic level with each other since time immemorial, people of both the islands had maintained their distinct social and...
cultural identities. Both spoke separate dialects. Whereas the Chowrians are the most industrious people of the archipelago, the Teressans were considered the laziest of all; whereas Chowrians are strictly monogamous, the Teressans practiced ‘oath marriage’. Whereas Chowra is supposed to be the land of wizards, with the belief that a Chowrian could change the direction of the wind and the waves during a voyage, Teressans seldom ventured into the sea; though, the medicine men of Teressa could sterilize a woman permanently by applying folk medicines.

During the last two decades unprecedented changes took place in Teressa. Earlier, the Chowrians came to Teressa on canoes for some horticultural work in their friends’ garden, in lieu of which they received coconuts, yams, banana, tapioca, cloths, pigs et cetera. With the introduction of modern means of communication, such as fast ferryboats, the frequency of a Chowrian’s visit to Teressa increased manifold. Many of them settled here permanently, and married Teressan girls. The development of means of communication enabled the industrious Chowrians to virtually colonize the Teressa Island. Today, even the dialect of Teressa is at the verge of extinction, only a handful of persons remember this dialect now. The feeble Teressa could not withstand the economic and cultural onslaught of the zealous and sturdy Chowrians.

Before we discuss the interactions between Chowra and Teressa, let us examine the ecological and demographic conditions of each. Chowra is 2.8 square kilometers in size; and the population has been over 3000 souls. The entire island is flat except the southern end. There is a cliff of 300 feet in height at the southern end, locally called “Tahop”, means ‘the devil’s abode.’ Annually, people climb up the cliff for ‘ceremonial crab hunting.’ After they climb down the cliff, sacrifice of a chicken or pig ling is considered inevitable, lest the ‘devil’ would become angry and would cause death and disease in Chowra. “Hiva”, is another sacred place in Chowra. It is considered that the earliest ancestors of the Chowrians first landed at Hiva. The Chowrians are expert in pot making. The women make earthen pots, which are considered to be endowed with magical powers. The people of other islands keep Chowra pots in their houses with the beliefs that if the meals are cooked in Chowra pots during the festivals, it would prove to be harbinger of fortune; and if a child is bathed in water boiled in Chowra pot, he/she would be immunized of black magic. The Chowrians are also expert in making canoes. Their canoes are used for long voyages as well as racing purposes.

And the irony is that neither the suitable clay, nor the suitable flora is available in Chowra for making pot or canoe. Clay is brought from Teressa by making a ceremonial voyage to the island; and whenever a Chowrian wants to make a canoe, he goes to the house of his family-friend in Teressa, works in his garden, or thatches the roof of his house, and in turn demands for a suitable tree for making a canoe. I have earlier described in detail the process of pot and canoe making by the Chowrians in my different articles (see Sahay, 1976, 1979).

Contrary to the island of Chowra, Teressa Island is 27 sq. km. In size, and the population in the year 1974 was that of 351 souls only. Thus, density of population was very thin in
Teressa as compared to Chowra. The Teressan medicine men sterilize a woman for whole life by their folk medicines (for detail see Sahay 1997).

All the works of Teressans are done by the Chowrians. The Chowrians thatch their roofs, make their gardens, and do all domestic works, which require physical power. As a result the Teressan have become lazy and indolent by nature. They spend most of the time in ancestor worship and celebrating festivals. During such times they just eat, drink and be merry.

**How did the Chowrians colonize Teressa?**

Island of Teressa happens to be the nearest island from Chowra. It is but natural that there would be more interaction between the two. Because of paucity of sufficient foodstuff, the Chowrians go to other islands in search of work. Teressa people not only provide them work but they also provide the Chowrians share of crops in their gardens. They also provide them suitable tree for making canoes. The Chowrians also obtain clay from Teressa for making pots. Besides the above there is acute shortage of drinking water in Chowra. Therefore, the Chowrians come to Teressa with hundreds of coconut shells to fetch drinking water for their family members at Chowra. Although the Chowrians make ceremonial voyages for exchange to the other islands, except the islands of the southern zone, however, there most frequent visit takes place with Teressa.

Earlier (before the conversion to Christianity), the Chowrians never stayed in Teressa or for that matter in any other island for more than two weeks. They apprehended that if they stayed for more than two weeks, their wives and children would starve in Chowra, as also the spirits in Chowra would cause them harm. Therefore, a Chowrian never settle in other islands, in spite of having the thickest density of population and scarcity of foodstuff in his island.

Till 1974 not a single Chowrian had converted to Christianity despite repeated attempts made by the missionaries at Car Nicobar. But after mid 1970s the scenario changed. The Car Nicobarese were successful in converting some Chowrians to Christianity. Once the proselytizing began it never stopped, and by the year 2002 all the Chowrians had adopted Christianity. After their adoption to Christianity they gave up most of the superstitions belief and practices. Earlier, for a Chowrian, settling or marrying in other islands was tabooed. After conversion to the Christianity they did not consider it a taboo. As a result they began to stay in Teressa for a longer time, besides economic interaction, they began to interact at the social and family level. Many of the Chowrians became ‘gulam’ (i.e. marrying a girl and living with her parents). And thus began the process of colonization of Teressa by the Chowrians.

This process of colonization began in mid 1970s. By the year 2002 it almost wiped out the traditional culture of Teressa. Today the population of Teressa is over six thousand souls. There is no such family where the Chowrians have not married and produced children. The Chowrians outnumbered Teressans in such a way that Teressan language has also reached at the verge of extinction. There are only a handful of people who still
remember the Teressan language. There are only a handful of medicine men that know the folk medicines.

In the Nicobar Islands the Chowrians were and are still consider being the most laborious and industrious people, whereas the Teressans were and are considered as the laziest of all. The case of Chowra and Teressa is an example of how an industrious population subdues an indolent one. Such process of intra-island colonization cannot be stopped anywhere; however anthropologists could at least study and document such fast vanishing cultures, like that of Teressa, before it is too late.

References


Improving the Methods and Orientation of Researchers in Small Island GIS Capacity Building:

The Case of Chuuk, Federated States of Micronesia.

Proceedings of the ISLANDS OF THE WORLD IX: Sustainable Islands - Sustainable Strategies


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Abstract

Geographic Information Systems (GIS) hold the potential to be a helpful tool in both small island environmental governance, as well as in the collection of data for research about small islands. However, when the primary goal is to build capacity for islanders in rural, remote and least-wealthy islands to host GIS facilities and the technology themselves, it is important to recognize that the technology should not be the focus of efforts. Rather, a partnership-first approach will provide essential guidance as to the scope, training, data collection, implementation and outputs associated with the GIS-based endeavor. To underscore my points I provide a case study where I focus on the high (volcanic) island of Fefan in Chuuk State, Federated States of Micronesia, located in the Western Pacific. A combination of methods including GIS training, watershed management, environmental health education at the grassroots scale, and working with civil society to support appropriate technologies allows the partnership to make a contribution to dealing with water-borne diseases. Findings from this study will help GIS researchers better adapt their skills and scientific agenda to work outside their own cultures and physical and economic settings and be more effective. Non-researchers who partner in technology transfers will find the discussion useful as well, as it helps them to see such collaboration, and potential barriers to it, through the eyes of their partners from outside their small island culture.

Keywords: Chuuk State, Federated States of Micronesia, geographic information systems, capacity building, environmental education, small island geography, water resources management.
Science-based strategies and outputs that arise from interactions between outside researchers and small islanders are not always as well-received or self-sustaining as intended. Many researchers come to small islands with poor assumptions about how their previous expertise and knowledge can, and should, translate to working in small islands; and this often reflects a paradigm of “Development” found in their own culture that may not translate well in another (Britton 2000). This is especially true of technology transfers to islands mainly living sustainable agriculture and fishing lifestyles.

To make for a better experience for all involved in such endeavors it is important that researchers learn from, and try to improve upon, each other’s work so that they will have positive interactions with islanders. By noting assumptions, failures, and successes, the odds of this occurring are improved. While here I write most directly about and to researchers coming from other countries and cultures to work in small islands, persons from “the mainland,” or even other main islands in an archipelago, might also be considered “outsiders” to locals.

This sort of discussion is important because all stakeholders in environmental projects can improve their interactions if they critically evaluate the way they act and are perceived during the course of projects, and it is positive if they can see issues at least partially through each other’s eyes. The evidence that this message, while not entirely original, is not outdated and requires repeating, is the plethora of incomplete or questionably self-sustaining projects, or accomplishments in research report pages only, across small islands.

While the aforementioned technology-environment-society issues are broad in scope, in the space available here I focus specifically on challenges and opportunities for researchers wishing to partner to build geographic information systems (GIS) capacity in rural, remote and least-wealthy (RRLW) small islands. An short review of the author’s own experience
implementing GIS for improving access to safe drinking water in Chuuk, Federated States of Micronesia (FSM) underscores the author’s position. This case is not presented because I wish to idealize my work as “successful,” but because it is helpful to draw upon personal experience.

For a more thorough account focusing on appropriate technologies, impacts of Micronesian culture on projects, sustainability, and challenges to GIS and water resource management capacity building in Pacific small islands please see the forthcoming volume by the International Journal of Environmental Technology and Management on “small island developing states” (SIDs). For greater detail regarding Chuuk, FSM please see the previous manuscript and also email the author at bill.smith@unlv.edu for the web site to download it.

Disease, water and land management, and GIS

There are many reasons, driven both by science and local needs, that researchers travel to small islands to collect data and implement technologies such as GIS. Some of the greatest influences are concerns about environmental health, including those associated with water. There are a myriad of diseases linked to water (Abrams 2001). And, it is reported that there are:

- Over 1 billion without safe water;
- Over 3.4 M deaths occur annually, 2.2 M children (with suffering and economic loss); and
- 14,000 to 30,000 die each day from consuming contaminated water or food (UNESCO 2006; WHO 2006).

Land use and land cover are tied to water quality, as both point and non-point sources of pollution influence if water is potable. Often land use is analyzed via a basin management framework. Many in the North do not know that ancient Hawaiians practiced land management utilizing a basin, or watershed, framework extending “rim to reef” -- a methodology predating “modern” practices supported by the U.S. Environmental Protection Agency and a plethora of basin-based non-governmental organizations (NGOs) (Smith Jr. 2003a) (Figs. 1, 2 & 3).
Figures 1 & 2. Ahupua’a native Hawaiian method of basin delineation and management (Source: Hookipa Network of Kauaian Community Based Organizations 2003). Figure 3. Traditional basin hierarchy. (Source: Center for Watershed Protection 1999.)
Understanding where water is captured relative to potential sources of pollution such as dumps, areas of concentrated human or other animal waste, heavy erosion, etc., is important in medium and long-range planning for basin management that can result in source water protection (protecting water for consumption). A key tool for analyzing, storing data about, and managing land and water is the use of GIS in combination with remote sensing (RS) utilizing high resolution satellite imagery. Thus, there is potential for GIS and RS to improve understanding of what is happening on land so it can be better managed, or, at least, potential concerns can be tracked for future management as long-term technological capacity is built – thus, potentially improving water quality. Kyem (2004) and Craig et al. (2002) also show that GIS can empower.

However, some RRLW small islands like Chuuk, FSM have lagged behind in terms of development of baseline GIS data and basic applications. Yet, the greater challenge appears to be less technological in nature, and more about how to establish the kind of medium-term partnerships necessary to work successfully across multiple scales of governance, in relative isolation, and across a RRLW archipelago, and establish a successful GIS program.

**GIS work in rural, remote and least-wealthy small islands:**

**Technology or partnerships first?**

Despite globalization, rural, remote and least-wealthy small islands remain impacted by their distinct physical geography and relative lack of exchange of information and technology with the outside world for long periods. This, together with minimal human, economic and natural resources, necessitates strategies that assume almost no technical capacity (Keating 1984).

Partly because of this situation the temptation for researchers and other partners from the “outside” is to focus on the technology first. The controversial key decision to consider is
whether scientists ought to do what they do best and replicate previous work they were specifically trained to be expert in, or whether regional scientific data gaps should determine the agenda. Or alternatively, that perhaps that “the science” should not determine agenda, and that instead local needs should guide both scope and technological implementation. Simply put, do you put the partnership first and adjust to local desires, or should one have a science-driven agenda and seek partners willing to help fill it?

In my experience, and through some recent conversations with others that work in the field, I have changed my mind in favor of letting locals mostly drive the process. Without reliable partnerships in place over a reasonable time frame technological achievements can be ephemeral. Whereas, partnerships that last are likely to be built upon sincere interest in the subject matter, not just the technology applied to it. GIS work can focus on many areas, so why not at least start the partnership by addressing concerns as seen by locals, and then set the stage for the larger geotechnical agenda as time goes on? I argue that, unless the point is to gather GIS data and leave, science can’t drive the scope or process – at least not in the early stages.

The scale (e.g. village VS national) at which effective governance of a natural resource can occur is important to consider in order to plan effective training and outreach. One should not assume what that scale is based on previous experiences elsewhere. This can also help with data collection. For example, having local partners from villages, rather than just from the country, region, or state scales may be important to avoid conflicts that could occur regarding where surveys may take place or scarce land where future supporting technologies may be placed (Winter 2000; Fisher and Urich 1999). Sometimes perhaps the formation of an NGO to support a GIS project and handle grant money could help dispel some concerns in places where the governmental partner’s reputation is not good, or corruption is a major concern.
Alternatively, if local perceptions of what is important to study and who should be empowered in the process are ignored, it is still possible that when training ends a feeling of accomplishment will be felt as the technology is put in place and given a “test drive.” Yet, the technology may go unused in the long-run because of a lack of deep local interest in the GIS data collected and because the power of the GIS is only understood by main contacts. Then, when outsiders leave skills degrade, resulting in a waste of human and financial resources.

Britton (2000) also notes how a technology first approach to GIS in the Pacific is not beneficial and mimics the failures of traditional “Development” models. Winter and Stephenson (1981) and St. Martin 2001 provide insight the underscores how “parachuting” in high technology in a “turn-key” scenario holds little promise when relying on changes in behavior will require internal motivation and local participation to last. Unfortunately, the way many grants are administered, the researcher feels pressure to put a GIS in place and advance to concrete outputs quickly and before good relationships are formed!

To be balanced, despite having made a case for a partnership-first approach, it is worth noting that local partners do not always have full knowledge of potential technological options, and that they have their own politics and bias which help form their agenda. Thus, I do not mean to suggest that a GIS data collection or application agenda be a solely local choice, only that scientists do what is often very difficult for them, and often differ significantly to non-scientists.

Important initial questions to address

RRLW small island communities like FSM may be only a few hundred people on small basalt (high) islands or tiny coral atolls surrounded mostly by millions of square kilometers of ocean (Figs. 4 & 5). Operating in such a limited and isolated environment requires an intimate knowledge of culture in order to understand what may, with good fortune, sustain in the long run
Figure 4. Exclusive economic zones of Micronesia. (Source: Karolle 1993.)
Figure 5. Chuuk State, Federated States of Micronesia (derived from Landsat 7 ETM+ imagery).
utilizing primarily local resources. This sort of cultural knowledge is not found in GIS training. Thus, the value of multidisciplinary teams is underscored. Though, without local partners with a commitment and resources to see projects through once outside researchers are not available consistently, sustainability is not possible, even if the GIS project is excellent in other regards. For example, getting persons to practice GIS skills when training sessions are not ongoing can be a frustrating experience. Nevertheless, there are questions one can ask early on that can provide an indication as to whether a GIS project is likely to sustain and where to focus one’s energy.

Some important questions for outsiders to address before beginning GIS partnerships include: 1) What is the status of infrastructure and energy sources; 2) Where do flows of materials and support come from and how reliable are they; 3) What is the level and stability of financial support for partners; 4) Are there viable non-governmental and private sectors and what is their relationship with those in charge of environmental governance; and 5) What are the main “problems” with a spatial component from a local perspective (as opposed to what can a GIS do that has not been done here before)?

For those implementing GIS these questions help clarify who should locally advise and set agendas, who could be trained, and who can also train you in their areas of expertise. This should be done bearing in mind that it is less risky to have multiple networks to draw-upon than being dependent a couple individuals, and data can have multiple uses depending on the users. It is also worth noting how important it is to deliver mostly positive messages and also help develop a sense of accomplishment during GIS capacity building, thereby helping to maintain healthy relationships. And, where time and money are short, it is best to put those scarce resources into broad dissemination of skills and benefits, rather than achieving the highest standards of geotechnical quality (e.g. precision).
For those GIS projects including significant fieldwork and public outreach components regarding natural resource management, some additional important questions are important. They include: 1) At what scales does governance occur that might impact work (e.g. village scale may surprise outsiders by superceding national scale); 2) What drives the village-level economy and land use; 3) What is the nature and distribution of literacy (in the language of the outputs) and environmental education; and 4) What’s been the local experience with previous “outreach?”

Answering these questions helps the partners in RRLW small islands figure out other important questions. For example: 1) Who to seek permission from to do fieldwork, 2) From whom to get feedback and partner with at a village scale; 3) How to produce outreach materials; 4) How recommendations regarding land use or technology might be received; and 5) What is realistic to be implemented and who has the power to “get things done” at various scales down to the village level?

Capacity building should occur at all relevant scales simultaneously, rather than in stages, this way feedback reflecting the local perspective can be incorporated early. This type of approach is valued in public participation literature (Glass 1979; Paulson 1999). One concern, however is that if regular folks on a village scale participate in GIS field applications, this may spark expectations of payment, especially if the assumption is that “outsiders” come from wealthier places, and despite the project being pitched as being “for them.” Winter (1996; 1981) faced these concerns on Chuuk, FSM. In order to provide context of my work in Chuuk, I next provide a simple geography of the area before reflecting on my experiences there introducing GIS technology and applying it for land use analysis and watershed management.

**Chuuk State**

Chuuk State, FSM, one of the last places settled on earth, has a physical, biogeographical,
historical and cultural geography inclusive of the subcultures of the States of Yap, Chuuk, Pohnpei and Kosrae (Fig. 4) (Denoon et al. 1997). The U.S. Department of State (1996) notes FSM landmass to be 699 square kilometers (270 square miles) over four major island groups, totaling 607 islands and stretching 2,897 kilometers (1,800 miles) east to west.

Chuuk State possesses a land area of 127 square kilometers (49 square miles) (U.S. Department of the Interior 2000) (Fig. 5). Of its 290 islands, 40 are inhabited, the rest are mainly for food. Island geology and topography vary from relatively large and high mountainous basalt islands, to tiny low coral atolls. Weno is the location of the Chuuk airport, hosts government facilities, contains a small urban center on approximately one-third of the island, and is one of Chuuk’s 19 high volcanic islands enclosed by a coral ring composed of 87 small and low coral islets forming a lagoon (Fig. 6). See Smith Jr. (2003b) for detailed analysis of the area’s physical and human geography.

Islands are categorized locally in three groups. First are “high islands,” which are volcanic and are only in Chuuk Lagoon, second are coral-based “reef islands” of Chuuk Lagoon, and third are coral-based “outer islands” that exist in extreme isolation outside of Chuuk Lagoon. Due to space constraints this paper will not provide discussion regarding “low island” issues or geography (again, see Smith Jr. 2003 for treatment of these features).

Population

Chuuk accounts for 50.1 percent of FSM’s population, whereas Pohnpei, Yap, and Kosrae represent 32.2, 10.5 and 7.2 percent respectively (Division of Statistics, FSM 2002) (Table 1). However, in part because Chuuk has such a strong mariner culture and steep slopes, the population is highly concentrated along the coasts. Thus, the population pressure is greater than the statistics on table 1 portray.
Figure 6. Landsat 7 ETM+ imagery of Chuuk Lagoon illustrates major high islands and Neoch Atoll (coral appears light blue).
Table 1. Population Density for Federated States of Micronesia: 1994 and 2000  
(Source: Calculated from data from the Division of Statistics, FSM 2002).

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Total</th>
<th>Yap</th>
<th>Chuuk</th>
<th>Pohnpei</th>
<th>Kosrae</th>
<th>Total</th>
<th>Yap</th>
<th>Chuuk</th>
<th>Pohnpei</th>
<th>Kosrae</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land area (in sq. km)</td>
<td>702</td>
<td>119</td>
<td>127</td>
<td>342</td>
<td>111</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>Land area (in sq. mi)</td>
<td>271</td>
<td>46</td>
<td>49</td>
<td>132</td>
<td>43</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>Density (per sq. km)</td>
<td>150</td>
<td>94</td>
<td>420</td>
<td>99</td>
<td>66</td>
<td>152</td>
<td>94</td>
<td>422</td>
<td>101</td>
<td>69</td>
</tr>
<tr>
<td>Density (per sq. mi)</td>
<td>389</td>
<td>243</td>
<td>1.088</td>
<td>255</td>
<td>170</td>
<td>395</td>
<td>244</td>
<td>1.094</td>
<td>261</td>
<td>179</td>
</tr>
</tbody>
</table>

Selected aspects of climate

Temperature varies little in this area approximately 7 degrees north of the equator, and relative humidity normally ranges from 55 to 100 percent (Hamlin and Takasaki 1996). During El Niño periods drought can have devastating effects, but there is no true dry season. Data from the National Weather Service at Weno Airport for 1952-85 indicate the period of January to March brings about half the normal rainfall of 356 centimeters (140 inches) annually (Karolle 1993).

Ground water

Water yield on high islands is variable depending upon method of collection. Compacted volcanic material results in a shallow (unconfined) ground water lens (Anthony et al. 1993; Takasaki 1989). Thus, what occurs on the surface rapidly impacts water quality below. This is a reason that rooftop catchments are so attractive, given the high levels of precipitation. However, we found that shallow wells and springs dug-out by hand are often used. Thus, it is emphasized that source water protection should be a priority, given that people, farms and livestock (i.e. pigs) will continue to be scattered across the watersheds well into the future.
Capacity and governance

Environmental analysis and management capacity is poor. Serious fiscal and human resource constraints, combined with a physically fragmented and rugged landscape strewn across a sometimes dangerously rough ocean, often make it practically impossible for environmental managers to travel to places at a distance easily conquered in many other parts of the world. The Chuuk State Environmental Protection Agency had no GIS capacity (before this research), and only a single digit staff located only on Weno for the entire set of islands. Also, phone, fax, Internet and electricity are often off, or in jeopardy of being so due to lack of funds, and staff salaries historically are not always paid. Thus, GIS and RS can be helpful by allowing persons to be able to do analysis without always having to move place to place under these challenging conditions, but only with power and human resources stable.

Environmental education at the grade and limited “college” levels is unsupported – which impacts citizen behavior and potential pools of future environmental managers. NGOs are lacking. Given these concerns, the Micronesian Source Water Protection Coalition was formed. Founding members include the author, (now former) Executive Director of the Chuuk Environmental Protection Agency (EPA), Director of The Nature Conservancy of FSM, myself, and civil society members from the study area.

Daily life in most of Chuuk is run on an extended family scale, with village or island functions superimposed on top. So GIS outreach must start there. Additionally, in such a weak “regulatory environment,” and with the traditional forms of environmental management across FSM weakened by contact with the outside, there is arguably a governance gap that needs filling (Hezel 1973; McEvedy 1998).
A multi-scale framework matching levels of governance

Work occurred primarily at two scales. The first scale revolves around building Chuuk State level managerial capacity in terms of GIS and global positioning systems (GPS) technology, water improvement strategies and environmental health outreach. The second scale focuses on village/sub-basin scale analysis, low tech/cost source water protection and environmental outreach. *Strategies were implemented at both scales simultaneously to allow lessons from the work at each scale to inform the other early enough to make meaningful adjustments.*

In-kind contributions from members, contributions of Landsat and IKONOS satellite imagery from the Pacific Disaster Center, and grants from the Environmental Systems Research Institute (ESRI) and USGS Water Institute Program-104b helped make the research possible and were invaluable in creating land cover and land use GIS data layers.

Environmental health and water quality

Again, the objective was to utilize a basin framework. Thus, the author utilized GIS and delineated all basins for the first time for Chuuk (as was all land cover and reef). A few studies of water quality and resource management have been conducted in Chuuk in the past, mostly on Weno (Moen), with many around 20 years old (Clayshulte and Zolan 1980; Clayshulte 1983; DeWolfe et al. 1991). Fontaine (1987) finds unsafe water is a primary cause of FSM’s poor public health. In FSM greater than 30 percent of all diseases are directly connected to inadequate access to safe water. *Both villagers and state environmental officials recall previous cholera outbreaks, and this seemed to provide reasonable motivation to apply GIS to water and land use issues during initial implementation.* Due to space constraints see Smith Jr. (2003b) for a full literature review.
GIS Techniques

To prepare for outreach regarding waterborne diseases the first basic spatial data layers had to be created and staff had to be trained in basic GIS and GPS skills over several visits. It was important to use local examples for GIS/GPS training whenever possible. Basins were delineated from rim to the reef in the ancient Hawaiian Ahupua'a tradition (SOS 2006).

Land cover for the high islands was derived from 4 meter (13 feet) color and 1 meter (3 feet) panchromatic IKONOS satellite data. Two image maps of the island of Weno are created from this data in Figs. 7 & 8 to provide a feel for the resolution of the data (Weno is selected because the mixed land use provides diverse features to view). Landsat ETM+ imagery was also used for land cover and land use and for mapping reefs for all Chuuk State. The mapping process took approximately 1,000 hours, while time in Chuuk interviewing, training and doing outreach took five trips for a few weeks a piece over a year and a half.

Sub-basin inventory in Onongoch, Fogen and Fein villages

The following represents our inventory of the sub-basin including Onnongoch, Fogen and Fein Villages in Northwest Fefan. Selected in part because it is home to Chuuk EPA staff and research team member Juilta Albert. Having a local partner from the sub-basin was essential for establishing rapport and access in this pilot. This agenda was:

- Day 1. Survey and at the same time collect GPS data for mapping of:
  - Survey location
  - Source water
  - Potential contaminants

- Day 2. Interview and at the same time collect GPS data for mapping of:
  - Culturally important places
  - Consumption behavior
  - Secondary and unmapped tributaries

The surveys were conducted on October 17 and 18 in 2002, and represent 89 persons.
Figure 7. IKONOS 4-meter color image map of Weno, Chuuk, FSM.
Figure 8. IKONOS 4-meter color image map of Weno, Chuuk, FSM at maximum resolution without pixelation.
The study area has a perimeter of 4,281 meters (2.66 miles) and an area of 0.96 square kilometers (0.37 square miles). The population lives in a mostly forested basin, with the exception of the coastal area, wherein occurs the highest population density. The geology is of volcanic origin, again, providing for a shallow ground water lens that is thin and unconfined, and therefore under fairly direct influence of activities on the landscape. (Since source water protection was to be part of our participatory strategy, this is important to stress.) Local practices and economy include fishing and sustainable farming, so animal and human waste on the landscape are the primary concerns.

*Inventory of point and non-point contaminants*

An inventory of point and non-point contaminants is typically a core component of a source water protection plan. Those surveyed with the GPS units and imported into the GIS are labeled “F#.” We used free software from the Minnesota Department of Natural Resources website (http://www.dnr.state.mn.us/mis/gis/tools/arcview/index.html) to act as the interface between the GPS and GIS because it is free and is easy for locals to use with the donated ArcView GIS software. It can load GPS data to the GIS, or, allow one to delineate points, line and polygons on a computer and upload them to the GPS (e.g. so you know if you are inside the study area basin) (Figs. 9, 10 & 11). The team also planned to arrange water quality monitoring, but a massive typhoon stranded a member long enough to obviate these plans for that time period.

There is not enough space to convey all results, so representative findings are shared. It is noteworthy, that in previous studies on Weno by Detay et al. (1989), that all wells were found to have total and fecal coliform bacteria contamination. This is expected, as we found pig cages next to and spanning streams, and human untreated waste in close proximity. Our inventories and surveys in Fefan were conducted on a household basis, using questions and mapping
Figure 9. Study area on the island of Fefan from IKONOS 4-meter color imagery, digital elevation models for 3-D TIN, and re-registered older topographic maps.
Figure 10. Study basin on Fefan, Federated States of Micronesia, IKONOS 4-meter imagery, subbasin delineated and GPS points collected for survey of sources of water and pollution and culturally significant features.
Figure 11. Study basin on Fefan, Federated States of Micronesia, digital elevation models for slope maps and 3-D Tin, re-registered old topographic map from the USGS, subbasin delineated and GPS points collected for survey of sources of water and pollution and culturally significant features.
observations, while exploring potential indicators of susceptibility such as pollutants, as well as technology and indigenous and newer methods for managing water.

Consumption

Details of local water and sanitation technology, and detailed methods for our sub-basin survey can be found in my upcoming article in the International Journal of Environmental Technology and Management, or by emailing the author. Here I focus more on GIS applications. Nevertheless, it should at least be stated that the study area had some rooftop catchment systems in place due to a cholera outbreak in the 1980s. Rooftop catchment systems are a way to avoid concerns about pollution from land making water not potable. But, many people had no systems, and those persons that did often had malfunctioning systems, and even systems that combined rooftop water with untreated stream or spring water. Many people received water from springs dug-up and lined with a few rocks and covered with a tin slab held by gravity. Water passing from dug-up springs or small streams flowed by gravity to homes through PVC pipes.

Water is not boiled before storage in larger tanks, and therefore should be boiled before storage in smaller containers such as pots (F05) and Igloo coolers (F02). The key is that the water is boiled between storage and use for drinking, cooking, food preparation, and brushing teeth (which is sometimes done while bathing using untreated water). The surveys proved that this is often not the case in the study area.

Respondents used the same sources of water for drinking, cooking, food preparation, brushing teeth and non-consumptive purposes in the majority of cases, be it from a stream, spring or rooftop source. The “safest” water was almost never separated and saved for meeting basic consumption needs, as would be efficient. We found people who were using untreated drinking water from streams for drinking, cooking, food preparation, and brushing teeth.
Outreach

Given the plethora of on the ground scenarios, a *simple and flexible* set of guidelines regarding risk from source of water that is categorized by pollutant can be useful for stakeholders. The outreach we provided was based upon our survey of village experiences, sources of water and contamination, and local technology. It is based on observed sources of water and contamination, and ways to collect, treat and store water for consumption. It details the best local sources and treatment options based on a *realistic* evaluation of resources present, and makes clear which choices are best by categorizing in simple language what is risky, least risky, etc. (Table 2).

Not included here is the opposite side of the laminated brochure, which uses GIS, RS and photos of local examples to detail what a basin is, why locals should care, how local basin behavior can impact water quality and community health, and recommended realistic best practices. Materials have been produced in Chuukese and English (some laminated) at a volume and a format that allows them to be used for hands-on classroom instruction or community workshops (Gundry and Heberlein 1984). The concept is to create a simple set of sustainable choices that are flexible to the diverse set of circumstances on the ground, rather than insisting unrealistically that everyone have the “best” technology. Posters for schools and community workshops we conducted were also created (please see email author to download these). For those unfamiliar with how to conduct training and workshops Niedermeyer (1992) offers an accessible generic methodology for critiquing such tasks.

GIS was key to making the posters. The first poster is a general land-water and environmental health poster created for use by local Chuuk EPA and civil society team members for a wide variety of environmental education outreach programs. Based on our research, it
### General summary of major threats to health through utilizing water for drinking, cooking, food preparation, and brushing teeth listed by water collection technique

<table>
<thead>
<tr>
<th>Techniques</th>
<th>animal waste</th>
<th>detergent</th>
<th>*dirt/erosion</th>
<th>*hazardous household waste</th>
<th>human waste</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Rooftop catchment water kept only, with a clean system and container</td>
<td>no risk</td>
<td>no risk</td>
<td>no risk</td>
<td>no risk if system is clean</td>
<td>no risk</td>
</tr>
<tr>
<td>- When boiled and stored and served in a clean container</td>
<td>no risk</td>
<td>no risk</td>
<td>no risk</td>
<td>no risk if system is clean</td>
<td>no risk</td>
</tr>
<tr>
<td>2. Rooftop catchment combined with spring water in the same tank</td>
<td>sometimes risky</td>
<td>little risk</td>
<td>little risk</td>
<td>little risk</td>
<td>sometimes risky</td>
</tr>
<tr>
<td>- When boiled and stored and served in a clean container</td>
<td>no risk</td>
<td>little risk</td>
<td>little risk</td>
<td>no risk</td>
<td>no risk</td>
</tr>
<tr>
<td>3. Rooftop catchment combined with stream water in the same tank</td>
<td>risky</td>
<td>risky</td>
<td>risky</td>
<td>risky</td>
<td>risky</td>
</tr>
<tr>
<td>- When boiled and stored and served in a clean container</td>
<td>no risk</td>
<td>no risk</td>
<td>no risk</td>
<td>no risk</td>
<td>no risk</td>
</tr>
<tr>
<td>4. PVC pipe bringing water from spring with a vegetation buffer and cover</td>
<td>sometimes risky</td>
<td>little risk</td>
<td>little risk</td>
<td>little risk</td>
<td>sometimes risky</td>
</tr>
<tr>
<td>- When boiled and stored and served in a clean container</td>
<td>no risk</td>
<td>little risk</td>
<td>no risk</td>
<td>little risk</td>
<td>no risk</td>
</tr>
<tr>
<td>5. PVC pipe bringing water from streams</td>
<td>risky</td>
<td>risky</td>
<td>risky</td>
<td>risky</td>
<td>risky</td>
</tr>
<tr>
<td>- When boiled and stored and served in a clean container</td>
<td>no risk</td>
<td>no risk</td>
<td>no risk</td>
<td>no risk</td>
<td>no risk</td>
</tr>
<tr>
<td>6. Drinking water at springs directly without any treatment</td>
<td>**risky</td>
<td>little risk</td>
<td>little risk</td>
<td>**little risk</td>
<td>risky</td>
</tr>
<tr>
<td>7. Drinking water at streams directly without any treatment</td>
<td>extremely risky</td>
<td>risky</td>
<td>very risky</td>
<td>risky</td>
<td>extremely risky</td>
</tr>
</tbody>
</table>

* Boiling will kill germs in dirt, but leave the soil itself; it is difficult to predict the effect of boiling on reducing a variety of household wastes and detergent.
** Under the “animal” and “human” waste categories reduced travel time for pathogenic microorganisms is assumed to increase risk; this is in comparison to water that is piped and then stored before use.
*** Springs are assumed to be less vulnerable to the 2nd, 3rd, and 4th categories due to no “upstream” use and a vegetative buffer (though the fresh water lens is thin).
**** No technique is safe and avoids risk; if good hygiene such as washing dirty hands with soap and water is not practiced when handling water before using it, and the container it is placed in must be clean.
***** Boiling all water for drinking, cooking, food preparation and brushing teeth, even rooftop catchment water, is the safest strategy, as it will kill any pathogenic microorganisms in the distribution system and storage tank.

Table 2. Generalized source water risk and local options.
contains general suggestions for land management to guard environmental health, and flexible
guidelines for treatment, storage and consumption of water are illustrated. A second poster was
created specifically for the study-basin community, though it represents a typical Chuukese sub-
basin, and therefore, should be useful in other places in FSM and regionally. This poster
combines basin-oriented education for the study area, specific recommended land management
practices based on what was learned from the previous surveys, and the flexible guidelines for
treatment, storage and consumption of water mentioned earlier. The message is positive
whenever possible, avoiding long “do not do” lists.

These posters are also of interest to Chuukese people because they contain the first images
publicly displayed of the outer islands. Satellite images are processed to look like photos. For
many, even seeing only the lagoon at this scale will be a new experience, and curiosity draws
people in. A shared basin identity is stressed and underscores the idea of shared resources
(Neville 1999; Sanger 1997). I presented certificates of accomplishment to local partners to
celebrate their GIS accomplishments. In turn, they threw a small party. As we wrapped-up this
segment of our collaboration we discussed integrating GIS with water quality monitoring,
including use of interpolation techniques. Hospital records from Weno also could be linked
environmental data as well to visualize patterns of disease outbreaks – but coordinating this seems
a difficult endeavor. We did take care to set-up practice work for Chuuk partners. I hope that
local follow-up will help maintain skills.

Final remarks

GIS implementation in RRLW small islands should be less about GIS techniques and
methodologies, and more about integrating GIS into the lives of locals in such a way that they
will be motivated to take ownership and drive the process. The first skill necessary in doing so is listening.

Researchers are often well-meaning, intelligent and hard working people, but often they are so obsessed with their scientific (e.g. geotechnical) agenda that they need to force themselves to go slow down and hear what matters to small islanders who exist in a sometimes radically different world than they do. There is no guarantee of the sustainability of GIS work in small islands. But, building GIS projects around locally valued agendas and partnerships will often present better opportunities than a technology-first approach.

Acknowledgements

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10 Days on the Island:
A creative model for a sustainable creative culture.

Tasmania, Australia's southern most island state, is situated upside down at the edge of the world and hangs like an afterthought some 240 kilometres off the south-eastern corner of the Australian mainland and some 2000 kilometres north of Antarctica.

As an archipelago of some 334 islands, Tasmania's island identity, like so many other island inhabitants, is defined by its distinct coastline rather than by arbitrary lines on a map.

Tasmania's sense of its own cultural identity is strongly associated with the island's geographic location with its regions of untouched wilderness. Tasmanians boast of their island's distinct flora and fauna - its food produce that earns it the tag of 'clean and green', and, for its small size, a large number of creative people. In their practices, many of these artists (painters, potters, furniture makers, musicians, dancers, poets, architects, etc) often draw upon their environment, literally and metaphorically, for artistic inspiration.

This paper explores notions of culture and landscape through the practice and products of its island artists in an attempt to offer an alternative tourism model that celebrates the successful combination of an island's natural and cultural attributes.

By using the 10 Days on the Island festival as a model, this presentation will illustrate how a successful international arts event can project a small island like ours centre stage into a cultural tourist destination. However, as Tasmania gears up for its fourth festival in 2007, there is a need for circumspection and reflection upon previous festival events in order to ensure there will continue to be a sustainable future in this arena of cultural tourism.

By outlining previous 10 Days on the Island festivals - this paper addresses some of the difficulties encountered during the second festival in 2003 as a demonstration of what can happen when the same agenda results in conflicting outcomes. Inevitably, whenever arts and politics mix, artistic principles and political rhetoric often collide, that on this occasion caused many artists to question the festival's ongoing democratic creative integrity.

Differences of opinion will always occur whilst attempting to sustain a creative identity within an inspiringly sensitive environment, such as we have in Tasmania. The difficulty lies with a State government who, whilst it provides generous arts funding, also endorses a number of environmental management practices that go against the grain of many artistic principles.

Within Tasmania, numerous artists have a special relationship with their environment, informed by their awareness of the island's international status as a wilderness area. This 'genius loci' often appears in their work through a variety of expressive means.
The conceptual framework for this paper has thus been formulated from current historical and sociological debates on ‘nature’ as a cultural construct, and from the perspective of contemporary art practice.

The State of Wilderness.
Subjugation of the wilderness through a sense of fear and loathing has a well-documented history in 17th and 18thc European painting. In their formats of artificially depicted cultivated landscapes, pastoral scenes or majestic mountainous terrains became the conventionalised standard for the representation of nature upon which artistic models of the ‘picturesque’ and the ‘sublime’ were based.

In artistic practice, 'picturesque' simply means 'like a picture' but during the 18thc, it denoted an appreciation of landscape painting that reflected the kind of mythological classicism of Italian and French painting of the time. These observations were brought back to England and absorbed into British landscape painting that developed the debate on nature further, particularly in relation to the landscape gardening of Capability Brown that was to make the British 'picturesque' a peculiarity unto itself. Thus British landscape painting tended to portray the English countryside in pastorally idyllic terms, as cultivated and orderly.

Antipodean landscape reflections were similarly cast. When British born artist John Glover, for example, decided to forsake a prosperous living in Britain as a landscape painter to emigrate to Van Diemen's Land in 1831, he perpetuated this sense of the landscape as 'picturesque' in his Tasmanian works. Hardly surprising, as the need to reconcile a European vision upon its antipodean 'other' was a common struggle, not only for artists, but for all settlers who sought to describe the unfamiliar in familiar terms. Thus the appeal to Glover of much of Tasmania's gently undulating and open grasslands dotted periodically with clumps of trees did much to conjure up memories of 'a Gentleman's Park in England'. These tree-dotted plains, whilst inevitably perceived and represented by Glover as 'natural', and thus as manifestations of the 'picturesque', were in fact, anthropogenic - that is - they were the product of thousands of years of Aboriginal firestick land management.

A similar view of a tamed landscape was also being depicted in 19thc American art, where landscape painting depicted the wilderness as cultivated and subdued - the result of a similar colonisation ethos to that of Australia that regarded the pioneer and the wilderness as antagonists.

However, once the American wilderness was dominated, a feeling of national inferiority was to emerge about the country’s lack of man-made historical markers that was felt to be in sharp contrast, and thus to be found wanting, to that of Europe's cultural landscape. In

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2 From a curatorial essay by David Stephenson New Landscapes: Photographs from two Continents, Tasmanian School of Art Gallery, Hobart, 1985.
this instance however, geologists came to the rescue by providing natural examples as suitable alternatives to Europe's man-made legacies, arguing that America’s natural monuments of great geological age far surpassed that of any man made antiquity. This affirmation of America’s ‘sense of place’ therefore, within its newly created ‘cultural history’ gave rise to a love of nature through spiritual elevation in the form of transcendentalism. Henry David Thoreau’s promise of the world being preserved through the love of its ‘wildness’ created an aesthetic of nature that belonged very much to the romantic tradition - and thus environmentalism was born.

By the 1950s, the American photographer Ansel Adams’s carefully orchestrated black and white images of Yosemite National Park exemplified those efforts to translate this sense of spiritual reverence about ‘place’ into something more tangible. In artistic terms, Ansel's work was more reminiscent of the 'sublime' era of 18thc painting that celebrated the dramatic, the vastness and the terrifying magnificence of nature.

Whilst discussion in this paper to date has been in the interpretation of nature as a cultural concept through art, it is the understanding of 'nature' within the wider social context that has become an increasingly vexed question in Tasmania. The debate about Tasmania's wilderness, about what it is and its importance to the future, has become increasingly and inevitably entangled with politics. It is in the understanding of 'nature' and 'place' that ensuing politics and art have collided that has necessitated this broader debate.

Since the early 1970s, theories about 'place' were explored more systematically, developing notions of a 'sense of place' in broader terms.

According to Dr. Peter Hay, from the University of Tasmania's School of Geography and Environmental Studies, the discipline of Geography determines that 'place' is what you get when an otherwise featureless piece of terrain, or a 'space', is accorded an identity.

Hay says this notion has long since been replaced and that 'place' has now two schools of thought. The first, as prescribed by the Norwegian architect Christian Norberg-Schultz, holds that 'place' has an essential, even a timeless quality. That there is, within a given place, a spirit that is tenacious and enduring, and that it is this that ensures a 'place' self-perpetuates, while people and events come and go.

Norberg-Schultz's definition of 'place' is now no longer popular, as it is felt that 'place' itself doesn't have an essentially specific and enduring character all its own. Each place, it is now argued, is a matter for translation, and will be interpreted differently by different people at different times, thus awarding a place an infinity of meaning.

Nowadays, 'place' is defined more broadly. Hay outlines the second school of thought with three of geographer David Harvey's headings, which provides the basis for this paper's case in understanding the relevance of 'place', in particular the state of wilderness, to the Tasmanian arts community.
The first of Harvey's definitions is 'place as the site of environmental qualities'. In this 'place', he argues, we must seek to become aware and vulnerable to 'place's' presence. We need to know how the elements move within and alter it - to know how animals move through and become part of it and to seek knowledge with all our senses - of sight, sound, smell and touch.

Harvey's second category is 'place as the site of collective memory'. Here, the stress falls upon the mythologies of 'place'; on the layering of stories through the generations until a potent vernacular culture is in position, one that brings the folk past into the present, and ensures the seamless passage of time into the future. Place without story is no-place: it is mere space.

Finally, 'place as the site of community' refers to the bonding that occurs when people congregate together within a geographical boundary. The integrity of 'place' therefore, is inextricably bound to the integrity of community - the future of 'place', is thus inextricably bound to the future of community.

And therein lies the problem!

**Interpreting Wilderness as art.**

Any one particular site’s ‘sense of place’ will differ from one group to the next, whoever happens to occupy it at the time. An environment, therefore, only becomes a ‘landscape' when it is regarded so by its occupants and its ‘presence’ is arguably felt more acutely from an island perspective.

To many like Ansel Adams, conservation ideology tended to position man in separation from nature, defining and celebrating wilderness by its lack of human presence. His images reflect this in the magnificent isolation and the moody ambience of both his subject matter and how he composed them.

Well known Tasmanian wilderness photographers and conservationists, Olegas Truchanas and Peter Dombrovskis applied similar compositional strategies in their photographic representations of the Tasmanian wilderness during the 1970s and 1980s respectively.

Olegas Truchanas, a Lithuanian-born Tasmanian, lost his life whilst exploring and documenting the Gordon River Gorge in the heart of Tasmania's south-west wilderness in 1972. It was said by many that with his death, those who loved the unspoiled wild beauty of Western Tasmania lost its most foremost and talented champion. For more than 20 years Truchanas had waged an unceasing campaign against ignorance, apathy and misunderstanding amongst the general population and politicians alike of the gradual alienation of what remained of one of the world's last great primeval regions through the lens of his camera. His epic, lone journeys into the bush took him to remote valleys and mountain ranges, all of which he documented photographically.

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3 Ansel Adams was associated with the American conservation group Sierra Club, created in the late 19thc.
Truchanas's greatest contribution to the cause of saving wilderness areas was in his artistic renditions of the areas he had spent years walking through. Capturing the essence of these wild places on slide, Truchanas would present these images as orchestrated audio-visuals to packed audiences. People watched in rapture as image after image merged and dissolved to the strains of Sibelius and Delius.

Truchanas's biography by artist Max Angus, *The World of Olegas Truchanas*⁴ was produced after his death and is a lasting testimony to his photographic skill. Many of Truchanas's haunting images helped inspire a whole new generation of landscape interpretation through photography that was later to become synonymous with politically motivated conservation groups in their campaigns to save other wilderness areas.

Peter Dombrovskis was born of Latvian parents in Germany, and migrated with them to Tasmania as a refugee in 1950. As a student of Truchanas, he learnt to see the wilderness through the lens of his own camera and Dombrovskis became a wilderness photographer in his own right, specialising in large format wilderness vistas and in close-up intimate details of nature. It was his photograph of Rock Island Bend on the Franklin River that helped save the river from being flooded by the Hydro Electric Commission in 1983.⁵ Through the work of both Truchanas and Dombrovskis, wilderness photography emerged as a genre unique to Tasmania that was to gain art world credibility through its association with radical politics.

**Wilderness as commodity.**
Understanding the nature of 'place' in Tasmania is, therefore, to appreciate the significance of its wilderness and its importance to those that live here, particularly to many of its artists.

With artists of the calibre of Truchanas and Dombrovskis actively involved in conserving the wilderness through the voice of their art, it is hardly surprising that many other contemporary Tasmanian artists continue to voice their own disapproval of certain governmental environmental practices.

Appreciating the importance of wilderness to the Tasmanian artistic community is to understand their alarm in the State government's attitude to the island's natural resources - the two are often in direct conflict with each other. For example, the Tasmanian government has a history of resource harvesting that has left townships treeless, rivers polluted, wild lakes flooded and rivers dammed that many artists find reprehensible.

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⁴ Angus, M, *The World of Olegas Truchanas*, Olegas Truchanas Publication Committee, Hobart, 1975. Truchanas's photographs of Lake Pedder were the first time that Wilderness photography had been used for political effect.
Forestry Tasmania, for example, is one governmental body whose practices are of particular concern to many artists. Forestry Tasmania realises that their practices arouse continuous debate and recognise the need to strive for more sustainable outcomes. Whilst acknowledging community concern about issues surrounding the management of its native forests and its silvicultural practices, it admits that the resolution of these concerns in a sustainable fashion is not always straightforward.

Forestry Tasmania's dominant by-product to its forestry management program is pulpwood, and in their own words, they state that:

> most eucalypt native forest logs are considered too defective to be suitable for commercial production of solid wood uses (sawing and the manufacture of veneer). The next best market is in their sale as pulpwood to the pulp and paper plants in Tasmania - however, the vast majority of Forestry Tasmania's pulpwood is exported as woodchips to pulp and paper plants in Asia.

Sadly, this translates into a conversion of bio-diverse native forests into monoculture pulpwood crops. Woodchip logging in the Styx valley for instance, consumes up to 600 hectares (1,500 acres) a year. Many trees are 400 years old and well over 90 metres high - approaching the height of St Paul's cathedral. The eucalyptus regnans in the Styx valley are amongst the tallest hardwood trees in the world, with some reported specimens even taller than the redwood sequoias of America - thought to be the world's largest plants. Nearly 60,000 hectares of Tasmania's forests have been logged in the past five years and protest over the Styx has been the biggest in the state since the Franklin campaign of the 1980s against the dam.

In response to public anger over the State government's endorsement and support of Forestry Tasmania's native forest practices, Forestry Tasmania has attempted to appease public opinion by developing a number of visitor centres that are intended to 'educate' the public by titillating the senses. They have done this by applying culturally artistic practices, employing well-known and respected architects to create eco-friendly award-winning architectural design projects.

Recognising that strong public opinion could be placated by the application of artistic endeavours the late Jim Bacon, Labor Premier of Tasmania (1998-2004) undertook not only his portfolio as head of state, but also that of Arts Minister.

**The charisma of culture.**

During his time as Labour premier, Jim Bacon recognised the 'value added' aspect of Tasmania's makers and actively encouraged the arts through the state's funding body, Arts Tasmania as well as several other arts initiatives. In 2001, Bacon inaugurated the first of the 10 Days on the Island festivals, an international arts event that would invite

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1 Forestry Tasmania is a Government Business Enterprise established under the Forestry Act of 1920 that is responsible for the sustainable management of Tasmania’s 1.5 million hectares of State forest for ‘wood production, recreation and conservation'.

8 Information sourced from Forestry Tasmania's website.
islanders from around the world to Tasmania to help celebrate their uniquely island cultural status through the visual and performing arts.

Unlike its festival counterparts in other states and countries around the world, Tasmania's 10 Days on the Island was structured to encompass the whole island and not just its capital and regional centres. This resulted in a strong sense of inclusion from normally disconnected communities.

In its first year, festival director, Robyn Archer and her team placed the festival's 150 events in 32 different locations around the state. This included 123 ticketed performances, 30 free events and exhibitions, 15 Australian debut instances and more than 130 artists from 28 companies and 12 countries.

The events themselves included dance, theatre, music, opera, physical theatre, circus, sound, puppetry, film, literature, exhibitions, installations, discussions, master classes, workshops, literary prizes, gastronomic feasts and a separate Hobart Fringe Street Festival at the conclusion of the official 10 Days.

More than 100,000 people attended events comprising 30,000 at ticketed events (14 shows experienced sell out seasons) and 70,000 at other free events and exhibitions. Audiences embraced the unique opportunity to witness island performances from around the world while celebrating the talents of the Tasmanian arts community - some 50% of the program featured Tasmanian artists in a plethora of exhibitions and events around the state.

The community embraced the unique concept of celebrating island culture and the media were instrumental in communicating the excitement about the event. 10 Days on the Island generated $4.3 million dollars worth of publicity locally, nationally and internationally with more than 500 press articles and extensive television and radio coverage, which enabled the development of excellent international contacts for future projects.

With local government support through Tourism Tasmania five international journalists experienced 10 Days on the Island first hand, including four from the USA and one from South Africa. With national support from the Department of Foreign Affairs and Trade, three guests attended the event, two from New Caledonia and one from Singapore.

The economic impact of this first festival was to inject in excess of $1 million dollars directly into the Tasmanian economy, benefiting a wide range of local businesses. Anecdotal evidence from gallery owners, restaurants, retail outlets, etc, all indicated that the festival activities generated significant additional spending by visiting artists, tourists and event patrons, as well as the locals.

10 Days successfully secured assistance from a number of foreign governments and agencies for international artists to participate that also created a number of touring alliances to other Australian states and to other countries at the conclusion of the festival.
In the euphoric aftermath of the first 10 Days2001, Festival Director Robyn Archer acknowledged that of 'all the stars in our firmament, Tasmania itself was the brightest by far'. She went on to say that the outstanding success of the festival was in part due to the island itself, to 'its unbeatable edge - its scenery, wilderness, buildings, history and culture'.

Whilst all three festivals quite properly acknowledged the vexed question of history (in relation to Tasmania's indigenous people) in its inclusion of Welcome ceremonies that paid token, but nevertheless sincere gestures of reconciliation, it was in the understanding of the significance of 'wilderness' that the organizing committee failed to appreciate. It was this latter aspect that was to cause the second festival to falter, and to leave a distinctly unpleasant pall over the whole event in 2003.

The fact that such a high number of Tasmanian artists were profiled alongside their international counterparts meant that the island became a cultural world stage, spotlighting a broad range of talent and diversity of artistic practice. This also highlighted that much of the aspirations and inspirational factors that drive many Tasmanian artists are connected to the wilderness and the concerns for its exploitation by private and governmental bodies - primarily, in the misuse of its old-growth forests. This in turn has politicised many artists, often putting them at odds with governmental policies and practices. This situation was compounded further during the 10 Days festival in 2003 by the fact that Bacon was not only premier of the state - he was also Minister for the Arts (with influence on the official state funding arts body purse strings), as well as Chairman of the 10 Days committee.

To illustrate the connection between practice and politics, this paper looks at the work of a number of Tasmanian artists who are deeply committed to the appropriate use of forestry resources and who deplore the current practice of felling old growth forests for woodchips. All these artists contributed to the original festival in 2001 and many use timber as their preferred medium in the production of finely designed art and craft-works.

During 10 Days 2001, there were a number of exhibitions and events that explored and reflected artistic concerns for forestry practice. For example, Tasmanian musical duo - Tina Aldridge and Chip Wardale of the nationally acclaimed Alchemy, produce distinctive blends of folk, ambient and world music on a variety of instruments. These include the Celtic harp, hammered dulcimer, fretless bass and various hand percussion instruments, all of which are made in Tasmania using native Tasmanian timbers. Amongst the drums in their musical line-up is a West African inspired djembe made by Marcus Tatton and Dan Magnus, the directors of Log Drums.

Tatton and Magnus started their drum-making business with a grant from the state funding body, Arts Tasmania in 1988, and from that time until the present, are recognised locally, nationally and internationally for the quality of their work, both aesthetically and musically. The drums are hand-carved from solid local timbers - Tasmanian Blackwood and Sassafras - that the two salvage from the remaining debris of clear-felled forest

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9 Robyn Archer's introductory comments to the 10 Days on the Island 2001 program report.
coupes. Living rough, often surrounded by the smashed remains of trees, ripped soil and
the stench of the carcasses of native species poisoned by 1080 pellets laid by Forestry
Tasmania to protect newly planted (mono-culture) pine seedlings - they would salvage
their materials.

For Tatton, there is a kind of terrible majesty to be amongst this carnage. Camping
under a temporary tarpaulin during his trips to retrieve the timber cast aside by the
loggers, he contemplates this formidable sculptor's playground until finally settling too
with his own two chainsaws, Claes and Constantin (named after Oldenburg and Brancusi
respectively). Oblivious to the cacophony of his own making, Tatton is inspired by the
vision of re-creating life, extending a small oasis into the heartlands of destruction and
revelling in the decorative rich grained nature of the timbers that he reinvigorates.

Tatton and nationally renowned furniture maker, Kevin Perkins, were two of the driving
forces behind the One Tree Project at the Tasmanian Museum and Art Gallery in central
Hobart. The One Tree Project was an official exhibition of the 10 Days 2001 program
that attempted to highlight a more responsible use of timber as value-added products rather
than woodchips as a model for a more sustainable approach to utilising the forests. The
aim was to demonstrate the potential value of one tree - in this instance - an 85 year-old
stringy bark euclyptus obliqua that was designated for wood chipping. By transforming
every last scrap of this tree into a range of artworks and auctioning the pieces on-line,
several thousand dollars were raised instead of the original $100 price tag.

Response to the Island: Ideas, Materials, Processes, Connections was another official
exhibition in the10 Days program that featured some of the state's most prominent national
and international artists. Amongst these, several furniture makers in particular used their
work to reflect concerns for forestry practice and conservation issues. Antique dealer and
painter Michael McWilliams collects Tasmanian colonial and period furniture to restore.
In instances where a work is so badly damaged - where panels need replacing for example
and thus rendering the piece as no longer authentically antique, McWilliams uses these as a
canvas for his intricately executed pastoral scenes featuring a range of farmyard animals
and native wildlife. His particular concern of late has been in the depiction of the now
extinct Thylacine - the Tasmanian Tiger - often painted looking out from the picture plane
and confronting the viewer in desolate melancholy.

The distinctive markings of the Tasmanian Tiger has also been depicted in more abstract
terms in furniture by Kevin Perkins who mourns not only the loss of the Thylacine, but
other threatened species native to Tasmania. Perkins uses decorative timber veneers, as
McWilliams uses paint to suggest the distinctive markings of the Thylacine in his cabinets.
In particular Perkins will use the aptly named, and very rare, rich red/browns of the Tiger
Myrtle in conjunction with - and contrasting to - Tasmania's prince of timbers, the yellow
honeyed Huon pine. In his Cape Barren Goose cabinet for Response to the Island Perkins
uses a combination of Huon pine and Silky Oak to celebrate the heartening story of the
rescue from near extinction of the Cape Barren Goose by a local islander.
Perkins along with long time colleague, John Smith were amongst the first of the Tasmanian studio furniture designers to experiment with the use of decorative veneers as a more responsible use of forestry resources. Smith also uses Huon pine in his furniture practice, and in his piece for *Response to the Island* explored not only the use of Huon veneered moulded plywood to create a functional cabinet, but also more abstract ideas of an island perception. In his *Marrawah Ripple - Malibu Swell* the forms of the cabinet draw their inspiration from the waves that lap the Tasmanian shores, bringing with them influences from overseas, whilst on their return, carry sensibilities beyond our own island perspective. As a migrant to Tasmania, and inspired by living and working overseas during a number of international residencies, Smith's work often refers to the contrasts and connections to other places and the place he now calls home.

Stories of migration and mediation are also the feature of two other well-known furniture makers, Patrick Hall and Peter Adams. Hall, whose work featured in *Response to the Island*, is one of the last of the migrating Britons known as the 'Ten Pound Pomms' to arrive as a child in Tasmania during the 1970s. His piece, *Cargo of Strangers* reflected upon this experience. Hall's work is poetic in its narrative and exploratory in its processes and by combining furniture making with print making techniques, he creates unique functional work with illustrative segments that fully engages the viewer on very personal levels. For example, his *Cargo of Strangers* relates the story of his own voyage with his mother and siblings to Tasmania - a detail of which reads:

> In that infinite ocean she saw for the first time the gentle arc of the planet. Behind her, a crowded world, drowned by history's repetitive chorus, dropped off the tablecloth of the sea. Beneath her feet and the rusty sheets a small battered suitcase lay in the intimate company of the cargo of strangers. While ahead, beyond the eyelash of sea and sky, is a place to unpack, spread and plant the precious parcel of seeds gathered from the past.10

*Fives sticks and a stone* is a Huon pine, she-oak, ironwood and beach stone bench, one of many that Peter Adams has developed that expresses his passion for his medium and the places from whence the materials are sourced. Adams migrated from the USA during the mid-1980s reveals his respect and awe for his materials. When referencing his use of Huon pine in the bench for the *Response to the Island* show, he talks of touching 'an ancientness that deserves reverence', and 'of feeling the voice of the mountain through the stone'.

This communion with nature has become a dominant feature in Adams' work. Over the past decade, he has produced a number of benches that reside along a meandering 2-kilometre pathway on his property *Windgrove* at Roaring Beach down on the Tasman Peninsula. He sees these benches as 'earth-links' that act as unifying elements in a disparate world; these are mediation pieces to encourage people to sit together, to communicate with each other and to hear the murmurs of nature.

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Windgrove was also one of the sites (the other two being Eaglehawk Neck and the infamous Port Arthur Historic Site) for the Sculpture by the Sea project that was part of 10 Days 2001, where 60 artists displayed work in response to the landscape. For the 10 Days - Sculpture by the Sea event, artists were invited to respond to a 'sense of place' by selecting one of the three venues to create site specific work relative to their chosen environment. At the headlands of Roaring Beach, John and Penny Smith installed their entry MacWindows Viewfinder, created as a giant Düreresque draughtsman's aid in the form of an oversize wooden frame connected with 'sightline' strings to a normal sized viewing chair set some distance away. Viewfinder was intended to position the viewer in the Macintosh inspired chair by these sightlines to enable the contemplation of a field of vision referenced by the grided format set within the frame. Also migrants from the UK, the Smiths aimed to provide another island view - that of Wedge Island viewed in the distance from the Roaring Beach headland - to create a view from the edge - from one island perspective to another.

An island to island perspective was also investigated in a work by John Vella entitled TerraTowel for the 10 Days festival in 2001. Another migrant to Tasmania, Vella was born in Malta, and is currently the Head of the Sculpture Studio at the Tasmanian School of Art, University of Tasmania in Hobart. Vella orchestrated Terratowel as a metaphorical reunion of his extended family. Within the converted quarry confines of Hobart's Salamanca Square, 'a typical Anglo perversion of the Italian piazza complete with café's, residential apartment balconies and the obligatory fountain', Vella collaborated with apartment owners to hang towels from each of their balconies on a daily basis for the duration of the festival. The towels were all freighted in to him from family members from Malta, Canada, Darwin, Melbourne and Hobart and distributed by him to obliging apartment dwellers around the square. Each day they made their appearance signifying a family divided by geography but united via this colourful semaphore of communication.

Sadly, this sense of communication and unity was almost lost during the planning stages of the second 10 Days festival.

The Cultural Divide.
Labour Premier, Jim Bacon relished the distinctively Tasmanian culture that drew from the diverse threads of society. His belief in Tasmania as a unique place was at the heart of his decision to initiate the 10 Days on the Island festival in the first instance. He and artistic director Robyn Archer could justly bask in the immense goodwill that was fostered as a result of the first festival with all the positive publicity it generated for the state.

However, in the 2002 lead up to the second 10 Days on the Island held during March-April 2003, considerable controversy was generated amongst the Tasmanian artistic community as both politics and the arts clashed over issues of forestry practice.

Matters came to a head when the Premier, Minister for the Arts and Chairman of the Board of Ten Days on the Island announced on the 12th April 2002 that Forestry Tasmania, a government agency, would be the major festival sponsor. As a major sponsor, Forestry Tasmania's logo would appear on every piece of advertising material
concerned with Ten Days on the Island for 2003. Implicit in this meant that any artist wishing to be involved in the festival would appear to be associated with, and apparently supportive of, Forestry Tasmania's business practices. The artistic community went ballistic.

By accepting Forestry Tasmania as a major sponsor for the 2003 festival, Bacon inadvertently drove a wedge between the local artists and the festival organizers that led to an artistic boycott, independent monetary pledges and an alternative festival. Future Perfect was a collaboration of writers, thinkers and visual artists that was presented in the art galleries and shop windows of the retail traders of North Hobart with Nobel laureate, Günter Grass as guest patron.

Heather Rose, a well-respected Tasmanian author and spokesperson for the artists developed an online system for the community to pledge money in support of the festival if Forestry Tasmania withdrew its sponsorship. Within 10 days, Forestry Tasmania's $50,000 was matched, and exceeded, by independent public donations. However, the government refused to accept this as a workable peace offering.

In his stubbornness, Bacon failed to acknowledge that forestry practices in Tasmania, particularly logging of old-growth forests, were anathema to many of the artists he admired and wanted to honour. Already angry at local artist's responses to Forestry sponsorship, and labelling them in Parliament as 'cultural fascists', he became even more bitter when writers of one of the richest literary prizes in the Pacific region removed themselves from nomination. Peter Carey, Tim Winton and Richard Flanagan all writers with international reputations boycotted the $40,000 Tasmania Pacific Region Literary Prize Bacon himself had initiated, which also came under the festival umbrella.

Flanagan (whose prize-winning novel Gould's Book of Fish is published in 14 countries and was regarded as a front-runner for the Tasmania Pacific Region Literary Prize) said the choice of Forestry Tasmania as a major sponsor of 10 Days on the Island presented many artists with a terrible choice. To have their name associated with practices they believed to be wrong, and to refuse to being part of events that would normally be of importance in the cultural life of Tasmania, proved a difficult decision for many to take.

Ironically, Flanagan played a key role in the creation of the prize – one of the richest in the literary world – first suggesting the idea to Premier Bacon in a detailed letter after Bacon won government in 1998.

Throughout the controversy, Premier Bacon was in no mood to compromise. Bacon's bellicose refusal to allow any mediation in the deadlock with the Tasmanian artistic community could so easily have been diverted by operating through Tourism Tasmania, instead of Forestry Tasmania, both government bodies.  

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11 Tourism Tasmania is a statutory authority established in 1997 and operates under the Tourism Tasmania Act of 1996. Governed by a seven-member Board appointed by the Governor on the recommendation of the Minister, its brief is to promote Tasmania nationally and internationally as a world-class visitor destination, and in the process providing jobs and revenue to the people and State of Tasmania.
Rather than seeing the incident as a cultural uprising in protest over a long-standing environmental issue at the heart of matters of state, Bacon chose instead to see the boycott as a political plot by the Tasmanian Greens. 12

**In Conclusion.**

To protect and maintain the wilderness's ‘spiritual place’ many conservationists would argue that this means keeping it pure and free from occupation. In *Memory and Landscape*, Schama is one of many contemporary historians and sociologists who argue that occupation of the wilderness is not necessarily cause for guilt or sorrow, but for celebration. He goes on to argue that there is no such thing as a pristine Eden, most ‘wildernesses’ have been touched by human intervention at some stage and have survived over time.

Modern humanity will always persist in locating itself in the natural world, continually grappling with notions of attachment and belonging, exploitation and nurture relative to its specific places. Tasmania is no exception. The first *10 Days on the Island* festival reflected a 'pride of place' and an enhanced sense of community cohesion that crossed the divide of personal politics, uniting the population through the creative spirit. This sense of unity faltered during the second festival through political mismanagement, environmental ignorance and the inability to remain flexible. Despite the setbacks, *10 Days on the Island* thrived in its third festival, and will hopefully continue to succeed in the next.

However, there are valuable lessons to be learnt from the experience. According to Dr. Peter Hay, one of the great consequences of studying the phenomena of, in this instance, an arts driven environmental culture within the confines of an island, is that the complexities and nuances get distilled down. Everything is all so much starker. In Tasmania the cleavage between green values and the dominant productivist paradigm represents a split that is ongoing, running through Tasmania's history to the present day.

The historical evidence behind island studies continues to serve as powerful metaphors for what can happen to the rest of the world if we are not more careful. Islands therefore, as microcosms of the rest of the world, can serve as barometers of social, political and cultural change that can herald the potential for environmental collapse or for sociological and cultural renewal.

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12 The Tasmanian Greens are a political party based on principles of Ecology, Social Justice, Peace and Democracy and form part of the Australian Greens and the global Green movement. Green politics first emerged in Tasmania in 1972 with the establishment of the United Tasmania Group, the world's first Green party, which later evolved to become the Tasmanian Greens.
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Sustainable and Renewable Energy Systems for Island Economies  
by Terry Surles, Ph. D., Pacific International Center for High Technology Research

Introduction

This discussion focuses on the need for developing economically viable sustainable energy technologies for Pacific Island Nations. This development will be critically important for two reasons. There is a need to utilize indigenous island nation resources to limit the need for petroleum. For example, a barrel of crude can cost as much as $96/barrel under current market conditions. Second, global climate change will require that all nations use less fossil fuel. In particular, Pacific Island Nations may be the earliest nations to be severely impacted due to rising sea levels as a result of climate change.

There are no simple economic technological solutions for reducing dependence on oil and on reducing carbon dioxide emissions due to fossil energy use. To achieve significant reductions will require technological breakthroughs in many areas. One way to achieve these breakthroughs is to introduce new technologies into regions most impacted by high-energy prices. These technologies must be economically viable on a local level, must be relatively easy to operate (minimal “learning” costs), and make use of indigenous resources. This will be important for also creating other benefits to local economies. Rather than to export money for energy, Pacific Island Nations can create businesses, build internal capacity, and improve their environment by utilizing local resources. This has positive implications for land use, waste re-cycling, and creation of additional markets for agricultural products.

The Pacific International Center for High Technology Research (PICHTR) was created following an agreement between President Reagan, Prime Minister Nakasone, and Governor Ariyoshi of Hawaii, who currently is Board of Directors chair. The impetus behind the creation of PICHTR was to allow for the testing, evaluation, and transfer of appropriate technologies to Pacific Island Nations. The term “appropriate” is used to characterize the need for utilizing indigenous resources for the economic and environmentally safe production of sustainable and renewable energy systems. As part of its mission, PICHTR also provides training to Pacific Island Nation citizens for properly operating and maintaining energy systems in their countries. This allows for additional capacity building and economic development.

Potential Renewable Energy Technologies

There are a number of technologies that could be appropriate for use in Pacific Island Nations. However, one size does not fit all. A few examples are important to note. For nations that have reasonably high population densities and minimal land available for either agriculture or waste disposal, the most effective set of technologies may be waste-to-energy or municipal solid waste energy technologies. For these nations, these technologies would serve to provide power, while limiting land use and environmental concerns.
For larger nations with considerable arable land available, biomass-to-energy technologies may be the most effective approach. Utilizing agricultural land to grow energy crops or using agricultural residues can make more effective use of land and create business opportunities for energy conversion facilities. This would also lead to additional local job creation. PICHTR has managed the development and demonstration of similar technologies. Called the Maui biogasifier, this technology made use of bagasse (sugar cane waste) to generate a biogas stream that was fed into a combustion turbine for the production of electricity. Given the high price of oil and, in the United States, of natural gas, there is renewed interest in these kinds of biomass conversion technologies. Recent PICHTR activities involved working with Japanese and Fijian institutions to determine available biomass resources for developing new biomass energy opportunities in Fiji.

Other Pacific Island Nations may want to consider utilizing wind and solar energy resources. Wind energy systems are currently competitive with many fossil energy systems in the United States. There are two problems with these systems. One is the requirement for appropriate back-up generation, since these systems are intermittent in generating electricity. This problem can be currently resolved by having fossil-fired back-up generators which does not alleviate the need for fossil energy resources. Future solutions will require further development of energy storage technologies. While these are not currently economically viable, they are improving rapidly. A second problem associated with some wind systems is the fact that many nations in the Pacific are on typhoon storm tracks. Typhoon force winds can destroy wind turbine systems.

The ocean is also an energy resource. There is a considerable amount of research currently being done examining wave energy systems. These are not now ready for widespread commercial deployment, but could be available in 20 years. The more promising technology is Ocean Thermal Energy conversion (OTEC). OTEC requires a temperature gradient to operate effectively. This gradient between surface waters and mid-ocean depth waters is available near many island nations.

OTEC has a considerable program history by the United States and Japanese governments. PICHTR operated the 200kW facility on the Big Island of Hawaii that was funded by both governments. While the demonstration was a technical success, it was not considered commercially viable. Much of the facility infrastructure remains in place. The high cost of oil may now make it economically viable and NELHA, the current facility operator, is considering installing a one-megawatt unit. The major concern of OTEC for many Pacific Island Nations is the same as for wind turbine technology. Being an ocean-based technology could place the system at risk during a typhoon.

**Integrated Energy Microgrid Systems for Pacific Island Nations**

Since 1996, PICHTR has been leading an effort to install integrated renewable energy microgrids in Pacific Island Nations. First, a facility was set up on the Big Island of Hawaii to test the concept. This was at Kahua Ranch. This system was expanded into a village power – or microgrid – system that produce 360 kWh/day of electricity to the working ranch. Since the
commencement of operations in August of 1997, it has produced the most extensive and longest running data set of its kind in the world. This data set is useful to all nations as they consider how to use less fossil fuel in generating electricity. The push to renewable energy will necessarily entail more use of microgrid and distributed energy systems.

The system utilized an integrated set of technologies in working with the Japanese Ministry of Foreign Affairs and private Japanese industries, who were the major funders of the concept. The systems deployed a variety of photovoltaic systems, wind turbines, and back-up storage systems (lead-acid batteries) and diesel gensets. Following the testing and evaluation of appropriate technologies, PICHTR brought Fijian technicians in for training. The concept was to train local technical experts, so that most operations and maintenance problems could be resolved on the spot. This is consistent with PICHTR’s mission to build capacity in Pacific Island Nations.

Following training, the system was deployed at Nabauwalu in Fiji. The system was designed to provide up to 720 kWh/day of electricity to the relatively remote community. This system was very effective, being online for about 85% of the time it operated.

Due to internal political issues in Fiji, a second set of technologies was developed following installation of the microgrid. These were solar home systems (SHS). These systems were designed for use in remote communities where even access to microgrids was difficult. These systems provided enough power to meet standard household needs in Fiji. Essentially, these were “appropriate” technologies that were small wind or photovoltaic systems with standard lead-acid battery storage.

The installation of early systems led to additional installation of systems by the Fijian Department of Energy at other locations. The Fijian and Japanese governments are currently discussing a Yen Loan that would allow for the installation of up to 12,000 units throughout Fiji.

There were three additional benefits to this effort. First, the training activity at Kahua Ranch allowed for the creation of a Renewable Energy Service company (RESCO) in Fiji. The proprietor now has a number of employees and has branched into other businesses. Second, the approach to running the system also allowed for the proper payment for the operation of the system. While subsidies helped to install the systems, users buy credits through their local post office to allocate toward the operation of their home system. Thus, the on-going costs of system operation are paid for. And, perhaps more importantly, test scores for students have gone up because they can study at night using electric lighting. Thus, the benefits of providing electricity go past simply providing power. There are both short term (RESCO creation) and long term (improved educational scores) economic benefits to the country.

Concluding Observations

It is clearly imperative that more sustainable energy technologies be available for Pacific Island Nations that allow for use of indigenous resources. The benefits go beyond providing for electricity. This allows for job creation, national capacity building, and improved education.
This also allows for a better balance of payments, since nations will not need to export money for oil. Finally any means to reduce the use of fossil fuels allow for less carbon dioxide being pumped into the environment. These sets of factors certainly mitigate toward the development and deployment of renewable and sustainable energy systems in Pacific Island Nations. After all, to get the world to a sustainable future we must address the five Es: economy, education, equity, energy, and environment.
Automobile use in small island developing states

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Abstract

Islands are attractive to researchers because they are detached, self-contained entities with obvious boundaries. From a geographers’ perspective, this has long been recognised as a distinct advantage, with islands effectively ‘functioning as small-scale spatial laboratories where theories can be tested and processes observed in the setting of a semi-closed system’ (King, 1993). However, one relatively unexplored island research area concerns the development of transport, and the growth of car-borne mobility worldwide.

This paper therefore examines the influence of the car in 45 small island development states – as defined by the United Nations - from 14 different regions using a simple linear multiple least squares regression analysis. Under this cross sectional process, car mobility was tested against factors including gross domestic product, population, vehicle ownership, road length, and urbanisation, data for which was obtained from a range of primary and secondary sources.

Overall, the analysis showed a strong relationship between increased mobility and increased GDP, while other factors which appeared to be important included population density and vehicles per road length. Various linear regression methods gave similar but slightly different results and these are explained more fully in the text.

Introduction

Car use – and the economic, social and environmental impact that this activity generates - is rapidly increasing in countries across the world. While much of this expansion is occurring in richer nations, growth in many poorer nations is also taking place and in many cases is becoming increasingly problematic.

Key characteristics of small island developing states

Islands are attractive to researchers because they are detached, self-contained entities with obvious boundaries. From a geographers’ perspective, this has long been recognised as a distinct advantage, with islands effectively ‘functioning as small-scale spatial laboratories where theories can be tested and processes observed in the setting of a semi-closed system’ (King, 1993 and McCall, 1994). However from the perspective of the policy maker on a small island developing state, this is a distinct disadvantage as these ‘microcosms’ already face many of the problems faced by more developed countries, but with less time, experience and resources to come up with a solution before the situation becomes critical - due to the faster growth of population and the economy (Gakenheimer, 1999), coupled with a lack of space.

Although worldwide there are nearly 2000 ‘significant’ islands of which only some are inhabited (UN, 1998), obtaining data for these would be problematic to say the least and so the focus of this paper has been to look exclusively at the 45 so-called Small
Island Developing States (SIDS) as defined by the United Nations (UN, 2003b). It should be noted that this list includes not only ‘islands’, but also ‘low-lying coastal countries that share similar sustainable development challenges, including small population, lack of resources, remoteness, susceptibility to natural disasters, excessive dependence on international trade and vulnerability to global developments. In addition, they suffer from lack of economies of scale, high transportation and communication costs, and costly public administration and infrastructure’.

SIDS have a combination of economic, social/cultural, geographic, climatic and environmental characteristics that distinguish them from larger and landlocked developing countries (Lockhart et al, 1993; Kakazu, 1994; Weisser, 2004). The interaction of these island-specific attributes generates a set of development problems that are often very different from those faced by larger countries’. In particular, intrinsic economic constraints have considerable influence on the economic structure and performance of an island. The most obvious limitation that SIDS have to endure relates to their geographic parameters of smallness and remoteness, as well as the acute outward-looking economic orientation. The combined influences can cause significant economic vulnerability and an inability to pursue economic development without substantial economic support. Finally, the smallness of SIDS leads to limited capacities both in terms of production and consumption. They are rarely in a position to develop economies of scale and cannot create substantial internal markets, as well as unable to raise large amounts of capital/finance on the home market. In many of these islands there is strong reliance on both aid and external remittances. These characteristics are summarised in Box 1.

| Small size | Limited natural resource base, high competition between land use, intensity of land use, immediacy of interdependence in human-environment systems, spatial concentration of productive assets. |
| Insularity and remoteness | High external transport costs, time delays and high costs in accessing external goods, delays and reduced quality in information flows, geopolitically weakened. |
| Demographic factors | Limited human resource base, small population, rapid population changes, single urban centre, population concentrated on coastal zone, dis-economies of scale leading to high per capita costs for infrastructure and services. |
| Economic factors | Small economies, dependence on external finance, small internal market, dependence on natural resources, high specialisation of production. |


Pelling and Uitto (2001) disaggregates its modified SIDS list into four island regions that share physical and cultural/historical commonalities, although it is also noted that there are still differences in political orientation, economic development, population size and land area. The groups were the Caribbean, Pacific, Indian Ocean and West African groups, while a European group of Malta and Cyprus was excluded. In this work we attempt to find commonalities based on transport trends and practices. Island specific issues are too diverse to adequately summarise here, thus here only land transport issues are addressed.
Factors affecting vehicle use

More broadly, there have been a number of studies looking at factors affecting car use across a range of countries. For instance, in a longitudinal review of cars and usage from 1958 to 1980 and for 19 (developed) countries, Tanner (1983) finds that among the clearest and strongest influences are those of income levels on the number of cars, and of petrol prices on the sizes of cars and hence how much petrol they use.

More directly relevant – in that it focuses on less developed countries - Button et al (1993) reviews vehicle ownership and use and finds that once again there is a strong relationship between car ownership and the rate of economic growth and that fuel price and income are important influences on fuel in the short term. More notably, it models vehicle ownership and use in low income countries, but specifically leaves out small island states as ‘special circumstances may influence underlying causal relationships’. The paper concludes that at the national level the main independent variable influencing ownership is income, while additional variables include the price of fuel, the level of urbanisation and the degree of industrialisation. Car use depends primarily on the level of vehicle ownership, followed by income, the price of fuel, the degree of urbanisation and the extent of the road network.

Gakenheimer (1999) reports that car ownership correlated with the top 20% of income earners in developing countries, and also to the percentage of the population in urban areas. It adds that other economic indicators perform very poorly – e.g. private consumption, industrial production, openness of the economy etc.

Transport in SIDS

Combining the strands of research into SIDS and factors influencing car use, it can be seen that research on transport in small island developing states is relatively scarce, and that which does exist tends to be of two types. First, there is some material conducted on the relationships between SIDS and the rest of the world. For instance, Hoyle (1999) reports on how maritime transport affects the interactions between islands in the Indian Ocean and East Africa, while there is also a body of work connecting SIDS and air transport, economic, environmental and social impacts (e.g. Ruwantissa, 1999).

Second, there are several studies conducted on individual islands or groups of islands – e.g. Enoch (2003) investigates transport in Mauritius, Enoch et al (2004) reports on transport policy and emissions in Cuba, while Attard (2005) draws attention to the Maltese transport situation. In addition, there is also a whole raft of articles referring to transport policy in Singapore (e.g. Willoughby, 2001), which is partly due to the unique use of road user charging employed there.

However, none of the literature appears to have looked at SIDS as an entity in order to explore the effect of a range of variables on levels of car use.

Methodology

Consequently, a small islands data set (of the 45 SIDS – see Appendix for full list) was constructed and then analysed using a range of linear multiple least squared regression methods.

All data was for the year 2002; if this was not available then data from the nearest previous year was substituted. Some values were not obtained for certain items and these are noted in the text where appropriate (see Appendix for an excerpt of the data). Table 1 links the explanatory variables with the key characteristics of SIDS reported in Box 1, and references the data sources used.
Table 1: Data set used for multiple regression analysis

<table>
<thead>
<tr>
<th>Variable name (units)</th>
<th>Variable type</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apparent mobility (km /yr-person)*</td>
<td>N/A (dependent)</td>
<td>US Dept. of Energy (Energy Information Administration, 2003)*</td>
</tr>
<tr>
<td>population (persons)</td>
<td>Demographic</td>
<td>SIDS Pocketbook (UN, 2003a)</td>
</tr>
<tr>
<td>area (km²)</td>
<td>Small size</td>
<td>SIDS Pocketbook (UN, 2003a)</td>
</tr>
<tr>
<td>isolation index (index)</td>
<td>Remoteness</td>
<td>Island Directory (UN, 1998)</td>
</tr>
<tr>
<td>urban population (%)</td>
<td>Demographic</td>
<td>SIDS Pocketbook (UN, 2003a)</td>
</tr>
<tr>
<td>population density (pers/km²)</td>
<td>Small size;</td>
<td>Derived from above.</td>
</tr>
<tr>
<td>GDP ($/capita)</td>
<td>Economic</td>
<td>SIDS Pocketbook (UN, 2003a) and CIA World Fact Book (CIA, 2003)</td>
</tr>
<tr>
<td>roads (km)</td>
<td>Small size</td>
<td>IRF World Road Statistics (IRF, 2003) and some Europa Handbook values</td>
</tr>
<tr>
<td>Vehicles/1000 persons</td>
<td>Economic</td>
<td>IRF World Road Statistics (IRF, 2003)</td>
</tr>
<tr>
<td>Vehicles/km road</td>
<td>Economic/Small size</td>
<td>Derived from above.</td>
</tr>
<tr>
<td>CO₂/capita (tonnes/person)**</td>
<td>Economic</td>
<td>SIDS Pocketbook (UN, 2003a)</td>
</tr>
<tr>
<td>fuel price, diesel and petrol (US ¢/litre)</td>
<td>Economic</td>
<td>GTZ (Metschies, 2003) and other web sources, see appendix for listing</td>
</tr>
</tbody>
</table>

*Notes: mobility was derived from apparent consumption of both gasoline and fuel oils; the full method is given in the text. **Emissions was not utilised in the regression set.

Of the initial 45 SIDS, Niue and Tokelau were not analysed due either to size effects and/or to a lack of data, while the US Virgin Islands, Aruba, Netherlands Antilles and Cyprus were removed following the first round of analysis due to outlier effects. In particular, the total apparent consumption of diesel and petrol was very high for these countries and it was not clear what portion of it was due to transport. However some of these islands were analysed with respect to wealth and mobility trends in the later statistical analysis. Data (IEA, 2005) gave lower mobilities since it only considered fuels used for road transport; the data set was smaller, and is not presented here.

To derive mobility values, which form the dependent variable for the regression analysis, the paper draws mainly on oil per diem usage as the main energy source data (US, DOE, 2003), supplemented by data from SPREP (2002) for Palau, Marshall Islands, Nauru and Kiribati.

This fuel use data was then converted into the mobility values by following a basic form of ASIF modelling (Activity, Structure, Intensity, Fuel type) where A - (passenger and freight travel), S - (travel shares by mode and vehicle type), I - (fuel efficiency) and F fuel use by fuel type (and CO₂ emissions per unit fuel use). ASIF is based on the work of Schipper and Marie-Lilliu (1999) – see Box 2.

Box 2: The ‘ASIF’ calculation process for apparent mobility

Barrels of fuel consumed per day ⇒ Tonnes of fuel consumed per year ⇒ Energy consumed per year ⇒ Litres of fuel available × Avg. fuel economy ⇒ Total potential kilometres for travel.

Diesel and Petrol vehicle kilometres are then summed and divided by the resident population.

Specifically, the liquid road fuels were converted into vehicle miles travelled by assuming a fixed fuel consumption value of 20 mpg (8.6 km/litre), a value which has remained remarkably consistent for many years across the world (Heavenrich, 2005; Padam & Singh, 2005; and Wright & Fulton, 2005). The vehicle miles travelled were
lastly divided by the national populations in each case to yield a motorised mobility value in km/inhabitant (as an annual value for 2002). This value is termed ‘apparent mobility’ in this study (as the fuel data utilised is the ‘apparent consumption’).

On the determination of the dependent variable, a range of linear multiple least squared regression analysis models - forward, simultaneous, stepwise and backward methods - were applied (ANOVA) to the data set in extracted from Table 1. For a fuller description of the methods used (Brace et al, 2000) gives an overview.

Results

The findings are reported in Table 2. From this it can be seen that all methods yielded a significant model (see column 2, top row), although there were subtle differences with a range of significant predicting variables from 3 to 6 dependent on method (column 1). The standardised coefficients are listed in column 2 (see β) with significance values in Column 3. In all cases, the number of cases analysed was 38, with missing data values for 3 items in the number of vehicles category and 5 in the diesel fuel price category. Thus, the final matrix consisted of 410 data items. Collinearity diagnostics for all the methods detected tolerance values between 0.144 – 0.244, thus the relationships between variables analysed was deemed negligible (not shown).

Table 2: Results of regression, reported by method utilised

<table>
<thead>
<tr>
<th>Method: Simultaneous</th>
<th>Variable (2)</th>
<th>F</th>
<th>R² adj</th>
<th>Sig. p &lt; 0.000</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>GDP</td>
<td>5.67</td>
<td>0.014</td>
<td>0.67</td>
</tr>
<tr>
<td></td>
<td>Vehicles/road length</td>
<td>0.437</td>
<td>0.079 not sig.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Population density</td>
<td>-0.333</td>
<td>0.050</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Method: Forward or Stepwise</th>
<th>Variable (2)</th>
<th>F</th>
<th>R² adj</th>
<th>Sig. p &lt; 0.000</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>GDP</td>
<td>0.806</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vehicles/1000 inhabit.</td>
<td>0.240</td>
<td>0.048</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Method: Backward</th>
<th>Variable (6)</th>
<th>F</th>
<th>R² adj</th>
<th>Sig. p &lt; 0.000</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>GDP</td>
<td>0.585</td>
<td>0.002</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vehicles/road length</td>
<td>0.491</td>
<td>0.005</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Population density</td>
<td>-0.342</td>
<td>0.007</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Urban population</td>
<td>0.210</td>
<td>0.047</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Surface area</td>
<td>0.185</td>
<td>0.044</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Population</td>
<td>-0.187</td>
<td>0.052</td>
<td></td>
</tr>
</tbody>
</table>

GDP is the strongest factor, but in some methods population density and vehicles per road length or vehicles/1000 inhabitants were also strong indicators for apparent mobility. From this analysis it was also possible to extract some useful trends and plots based on the data.

Overall, the regression models show that GDP remains as the most useful single indicator (β ~ 0.7), while vehicles/road length (β ~ 0.4) and population density (β ~ -0.4) contributed significantly to the model. The first of these was a composite variable which was designed to indicate a very rough proxy of congestion. The second variable gives a measure of the impact of space and is notable because the relationship is negative – i.e. mobility is less in more densely populated areas. In the
backwards method, population also gives a negative correlation for similar reasons to population density. It is noteworthy that the backwards method, which only adds variables if the model improves in significance, ultimately identifies a full 6 factors of the 11 employed. In all cases the isolation index value was found to be insignificant. Figure 1 depicts the relationship of mobility as a function of wealth, which clearly increases linearly. Specific cases are labelled. Data from lower income-lower mobility is shown as an expanded inset for clarity. Cases are labelled using the ISO convention for three letter country codes (see appendix for codes).

**Figure 1: Apparent mobility (km/yr-person) as a function of GDP ($/person).**

Note that the majority of cases lie in the lower and lower-middle income-mobility zone and that high mobility outliers (including US Virgin Islands and NL Antilles), are excluded due to their very high apparent mobility values, which were deemed to be incorrect (> 40,000km/yr). This was most likely due to the high use of fuel in these cases for transport not considered here (i.e. agriculturally related, marine, stationary devices, etc). Other (mobility) outliers included Nauru, Cyprus and Aruba; only NRU is visible on this plot. The plot includes the best fit linear trend line.

Once these outliers have been removed, the $R^2$ (adjusted) was 0.75 for a best fit line. Trends dependent on GDP were also observed for the motorisation levels as well as vehicles per road length (see Figure 2) and thus (total) CO$_2$ emissions/person. Many of the SIDS fall below the best fit line especially for those with the lowest incomes.

Single linear trends for mobility, motorisation levels, vehicles/road length as a function of either urbanisation or population density resulted in very poorly correlated trends and these are not presented here.
Figure 2: Vehicles per road length (units/km) as a function of GDP ($/person).

Figure 2 depicts the composite variable vehicles/road length for each islands case dependent on the island GDP. Similar linear trends were observed for motorisation as a function of wealth ($R^2 \sim 0.5$) where as Figure 2 was $R^2 \sim 0.4$. The composite function gives information about vehicle stocks as well as some indication of road network, especially when coupled with island size. As in Figure 1, an inset (above) has been produced here for clarity as many countries lie within the low motorisation (<50 veh/km) and lower-middle to upper-middle income region.

Discussion

The study shows that GDP is the strongest factor, and that vehicles stocks were also strong, secondary indicators for apparent mobility has been echoed by others (Gakehiemer, 1999, Button et al, 1993, Schafer et al 2000), albeit for non-island cases.
The adjusted \( R^2 \) of 0.75 relating mobility to GDP alone is slightly higher than that reported by Gakenheimer (1999), which instead found that motorisation was correlated with average annual income of top 20% of the population. The one method (backwards) where urban population was significant in the modelling supports that study’s trend which shows that motorisation is positively correlated to urbanisation for 12 low income countries. However, the more strongly negative correlation between population density (which could also be an approximation for urbanisation) and mobility seem to balance this result to some degree. The increased density (or urbanisation level) indicate that within highly populated areas that motorised mobility tends to fall. This matches work by Kenworthy and Laube (1999) even though that study focussed more on mobility in cities, and used quite different indicators for urbanisation. Car ownership was also found to be a function of increased urban density for the year 1990. In general they found that transit passenger mobility, car use per capita and urban density (in that order) correlated with gross regional product for developed cities, but less well for all cities (i.e. developed plus developing).

Also, whereas fuel prices are reported as being a key indicator of car use in Button et al (1993), they do not appear to be significant in the analysed SIDS dataset. There are probably multiple reasons for this but in part this could be due to the cross sectional approach combined with the relatively poor quality of the data.

In attempting to determine whether the particular SIDS-specific characteristics have an impact on ‘internal’ travel patterns, it could be argued that the negative mobility - population density relationship indicates that ‘smallness’ does significantly impact on mobility patterns. A second measure of smallness – road length – only becomes significant when combined with the number of vehicles to form a composite variable

Second, the remoteness (as measured by the isolation index which ‘measures’ purely distance-based isolation) suggests that in the case of the SIDS, no effect on motorised mobility in this study could be observed. Clearly there are arguments against this theory. For example Abeyratne (1999) points out some of the consequences of those SIDS which have extensive air transport networks and one would expect that SIDS with high air links might have higher apparent mobilities. This work could not easily though link isolation values with mobility, but further work should consider air connectivity and subsequent impacts.

Looking at the demographic factors, the relationships revealed here show positive correlations with vehicles per road km, or vehicles per 1000 inhabitants, and then urban population and weakly with surface area of the island. This is an indication of both the importance of transport stocks, such as vehicles, but also to access to these vehicles and affordability of fuel and transport costs. A measure of this which was not assessed should include overall costs of transport to users. This could be in real cost terms, or by a proxy such as percentage of GDP due to transport. As before this might be skewed by air transport in some instances, so annual road expenditures per capita may be better for determination of mobility on SIDS. Although not necessarily demographic an inclusion of public transport, when available, would also be recommended to give a fuller picture of individual mobility.

Finally, it would seem that economic performance (as measured by GDP) is the dominant explanatory factor of motorised mobility, and it is even more strongly correlated than elsewhere in the world. Other than GDP, the only other economic indicator of note is vehicles per road length or vehicles per 1000 people – the rest are much less significant, but they provide some useful insights.

Regarding limitations to this work there are two areas in particular worthy of comment. These are outlined in the paragraphs.
The first of these is in determining the dependent variable. In particular, there is an issue of too much fuel being converted into apparent mobility as a certain amount of fuels are held as stocks, while distillate fuel oil covers a broad range of uses such as agricultural machinery, but was assumed that road transport used the majority of this fuel. On the other hand, the apparent mobility value does not account for average vehicle occupancies – which are very difficult to obtain for most countries examined here. Therefore, an occupancy of one person per vehicle was assumed, which is obviously much lower than the actual persons/trip made, and so in this way the apparent mobility values calculated will be lower than the actual values. It should also be noted that the values do not count human-powered mobility such as walking and cycling, nor air and sea travel, although it is recognised that these may be significant. Certainly in the case of island nations sea travel may be very significant, especially for nations which are many islands.

The second issue concerns the use of a simplistic model. Here it is argued that the low quality of the data suggests that using more sophisticated techniques would add little to the usefulness of the results, although the use of per capita based variables does reduce potential problems of heteroscedacity which accompany the wide variations in countries’ populations, as well as the large spread in GDP (Button et al, 1993). What might be more useful in this respect would be to add, for example, another 40-50 islands worth of data in order to increase confidence in the data set. A larger set might also allow the possibility to ‘cut’ the set into more segments, either based on GDP, or via geographical basis. Others address this issue by only implementing the higher band of individuals countries GDP (Gakenheimer, 1999) on the premise that those persons earning more have greater access to travel, and thus are more mobile. It is difficult to ascertain whether this follows for developing countries as previous work has tended to be directed more at developed countries.

To follow this through, a summary table of mean values is given based on the income band of the SIDS as analysed by this study. Table 3 gives the mean wealth and mobility for each of the conventional UN designated income bands. In this calculation only those countries listed below are analysed, due to the reasons discussed earlier.

<table>
<thead>
<tr>
<th>Table 3: Aggregate average values of wealth and mobility for SIDS and world data sets, by income band, deviations shown in brackets</th>
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</tr>
<tr>
<td>Mean mobility (world)</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Mean wealth (GDP, SIDS)</td>
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<tr>
<td></td>
</tr>
<tr>
<td>Mean wealth (GDP, world)</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Cases (SIDS)</td>
</tr>
<tr>
<td>Cases (World)</td>
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</table>

Notes: (a) includes GNB, COM, STP, HTI, KIR, PNG, SLB. (b) includes GUY, VUT, CPV, TON, TUV, WSM, MDV, MHL, VCT, SUR, FJI, FSM, DOM, NRU, CUB, JAM, BLZ. (c): DMA, MUS, COK, GRD, LCA, PLW, KNA, TTO, SYC, MLT, BRB. (d): ATG, CYP, BHR, BHS, SGP, ABW.
The world mobility values are as expected higher than those for SIDS due to the predominance of higher incomes throughout the set of data for the world used by the US DoE. Nevertheless the world data set may be of use to compare to other sets; note that the world set does not includes the SIDS data within it as a subset. It is very interesting, and perhaps surprising, that in lower to upper middle income bands that the SIDS considered are indeed marginally wealthier than their world comparison counterparts, but yet, their mobility values seem to indicate that they are mobility constrained. The deviations for the wealth indicate that in reality, the SIDS probably have similar global incomes. The interquartile ranges, medians, and other indicators are not reported here for brevity. In the case of the SIDS’ mobility deviation values, these were obviously high due to the data set not being fully coherent. For example note that the mobility values had much larger deviation values when compared to the GDP deviations. Nor is the full data set of countries examined in the world (173) shown, but is essentially that used by the US E.I.A. (2002) as described in Table 1.

Overall what one can extrapolate from the data is that the small islands have mobility values which are 1.9X – 3X lower than world values for all income bands, and as an aggregated sub-set, despite the fact that the GDP is the same for the other world countries’ bands. The full set of 41 cases for small islands is indeed less wealthy by a factor of 1.6X and less travelled by 2.9X. That set, of 41, had a stronger correlation in trendline for mobility as function of wealth (R^2 ~0.52) versus that found for the world set (R^2 ~0.4) but this is probably explained in the very wide variation found in such a large world set (173 cases). Further work looking at each income band in the world set and the SIDS set would be useful. The world set also contains a large number of island nations, not part of the SIDS, which could effectively be separated out and analysed either as another sub-set or alongside of the SIDS if appropriate.

Conclusions

In summary, this study found that mobility was significantly lower for small island developing states by a factor of nearly 2X up to 3X, when compared to a much larger set of data for world countries. This was found to be true for all income bands as well when disaggregated. Wealth, as measured by GDP, was observed to be only slightly higher than the world averages for incomes bands at the lower end of the spectrum, but they were lower in aggregate, and for the highest income band. It could be argued that GDP may not be the best indicator of motorisation and apparent mobility in SIDS, and for other world nations. This study found positive correlations for income and vehicle stocks, with some weak correlation for surface area (smallness), population ( inversely), and urbanisation level. Population density was slightly more correlated ( inversely) and it would be necessary to review which ‘drivers’ of island mobility are most useful for transport policy. These measures could be applied both in an external context, in comparison to other countries, but also in more systemic, nissologic framework.

If these conclusions are applied to policy, it can be envisioned that in some cases it may seem that continued economic growth might inevitably lead to increased car dependency but in fact that is not necessarily the outcome. One example case studied here, Singapore, has low motorised mobility values, due to its high use of public transport structure and high densities (Kenworthy and Laube, 1999). Clearly it is a wealthier case, and there is most likely a demand for increased mobility in many of the other less wealthy SIDS. Transport policies in the cases of SIDS need to take into account the nature and characteristics of each island, or group of islands, in order to increase efficiencies and lower energy use. With respect to this, in many SIDS energy expenditure, and thus transport fuels, represents a large portion of GDP (Stuart, 2006) and thus policy should be aimed at both increasing efficiency as well as a strong consideration towards which policies are the most sustainable.
References


Kenworthy JR and Laube FB (1999), Patterns of automobile dependence in cities, *Transportation Research A*, **33**, 691-723


**Acknowledgements**

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**Appendix**

**Table A1**: Selected data used as indicators: see Table 1 for sources.

<table>
<thead>
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<th>Country</th>
<th>Code</th>
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<th>CO2/cap</th>
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<th>Petrol</th>
<th>Mob.</th>
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TOWARDS SUSTAINABILITY
A CASE STUDY OF THE ISLANDS TRUST - CANADA

by

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July 2006
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Abstract

Between Vancouver Island and the mainland of British Columbia (Canada), 13 large islands and 450 small islands shine like emeralds on a bracelet, sheltered from the wild waves of the Pacific Ocean. This area is referred to as the Islands Trust Area, and is recognized as one of the most ecologically significant regions in Canada. However, these island paradises are under extreme development pressure and habitat is being lost at an alarming rate due to numerous stressors such as unsustainable land use and the spread of invasive species.

In 2005 the local government responsible for the planning in this area, the Islands Trust, developed a regional conservation plan to address this problem. Using a three phased approach, the Islands Trust mapped the entire landscape of each of these islands, analyzed the data and established targets for protection for each area.

A variety of incentive, regulatory and voluntary tools will be used to achieve this regional conservation plan. As a local government, the Islands Trust can use land use planning tools such as amenity zoning, density transfers and development permit areas as incentives while zoning bylaws, subdivision approvals and development approvals are regulatory tools that can be used to achieve change. The Islands Trust Fund as the conservancy arm of the Island Trust, can use its tools of conservation covenants, land donations and acquisitions to also assist in achieving the goals of the regional conservation plan. Stewardship education and partnerships will also prove to be key essential elements to the plan’s success.

To evaluate its progress towards achieving the objectives of this plan, the Island Trust will use a process of adaptive management. This assessment process will review recent accomplishments against recent threats and new opportunities as well as against updated information on the changing landscape of the Islands Trust Area.
Introduction

Between Vancouver Island and the mainland of British Columbia, Canada, 13 large islands and 450 small islands shine like emeralds on a bracelet, sheltered from the wild waves of the Pacific Ocean. This area is referred to as the Islands Trust Area, and is recognized as one of the most ecologically significant regions in Canada. However, these island paradises are under extreme development pressure and habitat is being lost at an alarming rate due to unsustainable land use and the spread of invasive species.

In 1966 one of the islands in the Trust Area was subject to what was then the largest subdivision in Canada. This unprecedented level of development prompted the Provincial Government to create Islands Trust Act. The Act established the Island Trust as a unique local government whose objective is to: "...preserve and protect the trust area and its unique amenities and environment for the benefit of the residents of the trust area and of British Columbia..." (Islands Trust Act, 1974). The legislation also established the Islands Trust Fund, an arm of the Islands Trust that operates as a local conservancy or land trust. The Islands Trust and the Islands Trust Fund have created a method for preserving the Islands Trust by identifying areas of ecological significance, and by connecting these areas together into a network of protected areas. To accomplish this task the Islands Trust will need to utilize all the tools available to it as a local government and land trust, and think creatively to discover new and more effective ways to accomplish this goal.

Ecological Importance of the Trust Area

The islands in the Trust Area vary greatly in size: from one 180 sq. km island with a resident population of 8,000, to tiny rocky islets that provide important habitat for wildlife. The area is composed of two biogeoclimatic zones: the Coastal Douglas-fir (CDF) zone and the Coastal Western Hemlock (CWH) zone (see Figure 1).
The Coastal Douglas-fir zone has a Mediterranean-type climate that supports numerous rare and endangered species such as Peregrine falcons, sharp-tailed snakes and the phantom orchid, as well as the severely endangered Garry Oak ecosystem. In addition, an estimated 2 million waterfowl from three continents and more than 20 countries migrate through this area every year.

The Trust Area also contains the Coastal Western Hemlock zone, one of the wettest regions in the world and home to temperate rainforest. This mild, wet climate produces a highly complex and ecologically productive forested ecosystems.
Stressors

People are drawn to the Trust Area because of warm climates and the unique setting, not realizing that the very thing they desire is also the very thing they will destroy. Many of the changes people bring to small islands are not large scale exploitation such as mining but, rather, small changes such as a house, a garden or a small hobby farm. As Ehrlich (1988) points out: "The primary cause of the decay of organic diversity is not direct human exploitation, but the habitat destruction that inevitably results from the expansion of human population and human activities". Small, insidious changes can create stress on already vulnerable island ecosystems.

Many of the stressors that impact these islands occur over a long period of time with the effects not always immediately apparent. Other impacts dramatically alter the landscape within a small timeframe. Below is a list of stressors which are affecting the landscape of the Trust Area and are increasingly impacting the ecological integrity of these islands.

Population Growth

The Islands Trust Area has often been called the “Hawaii of the North” due to its warm climate that, unlike the rest of Canada, rarely sees snow. The current population of the Trust Area is approximately 23,000 people. This number continues to rise as more people retire and are drawn to the rural lifestyle that these islands offer. The result of this growth is increasing development and habitat loss. Today, two-thirds of the 65 species of vertebrates listed as endangered or threatened use habitats at risk in the Trust Area. Increases in development related to human population growth in the region have caused a dramatic loss of habitat for a variety of species. Future growth that is not well planned could result in greater loss of habitat.

Increased Visitation

The Trust Area has long been a tourist destination. In the summer many of the islands see their populations double and even triple. This swell results in increased stress to the islands ecosystems. In summer when visitation is at its highest and water resources are at their lowest, aquifer levels reach dangerously low levels where salt water intrusion becomes more likely.

Increased Use of Natural Areas

Increases in population and visitation result in greater human use of the few remaining parks or natural areas. Activities such as hiking, mountain biking, and all-terrain vehicles (ATVs) use are impacting the few intact habitats that remain on these islands.
Resource Extraction

In the Trust Area 90% of the land is privately owned. As private landowners are not subject to the same regulations as lands held by government, devastating forestry practices on privately held land have in some cases removed up to _ of an island's forest cover and destroyed wetland habitats.

Renovation and Redevelopment

The Islands Trust Area is at a development stage whereby reinvestment and redevelopment of existing properties is increasing at a rapid rate. This results in an increasing human footprint on the landscape.

Transportation Corridors

Collisions with automobiles are fatal for wildlife and result in species loss. Additional roads, road widening and increased traffic volumes are increasing wildlife fatalities.

Pollution

The waters in the Island Trust Area are part of a major shipping route that contributes to substantial marine pollution. Oil spills from tankers and sewage dumping by cruise ships and small boats are just some of the contributors to the increasing degradation of the local marine ecology.

Invasive Species

The deliberate and accidental introduction of non-native plant and animal species alters the species composition of ecosystems. Some invasive plant species are dominant and reduce diversity by displacing native plant species and by reducing vegetation structural complexity and soil stabilization. Transportation corridors and recreation vehicles such as all-terrain vehicles, bicycles, domestic animals and people, can all cause the spread of weeds. Invasive plant species known to exist in Islands Trust Area include: common gorse (Ulex europaeus), American stinging nettle (Urtica dioica) and Scotch broom (Cytisus scoparius).

Climate Change

It is now widely accepted that global climate change is occurring. The Trust Area is particularly vulnerable to sea level rise and temperature increases. Many species that live in this area will not likely survive the coming climactic changes.

1 United Nations Environmental Program 1999
Uncertainty

We will never fully comprehend all the stressors that affect these islands. In the past, many management decisions were based on simplified models that could not determine the correct response to an overstressed system. As Carpenter (1996) states:

*Science is the activity of understanding the regularities of the universe and revealing the simple laws that produce them. Prediction to guide human actions is also a primary goal of science and uncertainties interfere causing what actually occurs to differ from what was expected. Scientific truth is always somewhat uncertain (p.126).*

Achieving sustainability in such a context is a difficult task.

Towards Sustainability

In order to move towards sustainable land use in the Trust Area, there needs to be a plan that acknowledges the stressors discussed above as well as the scientific uncertainty that is inherent when managing ecosystems. To this end, the Islands Trust has created a regional conservation plan.

The Regional Conservation Plan was created using a three phased approach. First, the entire landscape of each large island in the Trust Area was mapped to determine to what degree each island has been modified by human use. Analysis was then performed on these maps to determine areas of high vulnerability and areas of priority for conservation. These results led to the heart of the Regional Conservation Plan, namely, a set of long-term goals, each with an associated five-year objective, intended to guide the policy-setting, decision-making and work programs of the Islands Trust. The focus of these goals and objectives is as follows:

- Protect ecosystems that are still in a natural state (i.e., landscape units with little or no human development). In the Trust Area these are usually rare and/or fragile ecosystems.
- Protect nationally and provincially identified ecosystems and habitats of species considered endangered, threatened or of special concern.
- Protect a matrix of different ecosystem types.
- Expand already protected areas and create a protected areas network on each of the islands.
- Constantly improve our information base.
- Review goals and targets on a yearly basis, measuring success and adjusting as necessary.

To achieve these goals the Islands Trust will be using a variety of incentive, regulatory and voluntary based tools.
**Incentive Tools**

Incentive-based planning tools, such as amenity zoning and density transfer, harness the motivations of the marketplace to encourage conservation.

**Amenity Zoning**

Amenity rezoning occurs when an owner is seeking rezoning of his/her property to develop more intensively and is willing to offer up a public amenity (i.e., something that is of value to a community—for example, a park, trail or public beach access). The landowner may have his/her rezoning application approved if the amenity being offered has great public support.

Although very effective, this tool must be used with caution. There is a perception within the island communities that this type of zoning leads to situations wherein the developer wins and the community loses. It is therefore critical that areas designated as having high amenity value be clearly identified by the community.

**Density Transfer**

Density transfer is a planning process that shifts subdivision development potential from one parcel to another. It involves a *sending area* (where development might have notable negative impacts or where desirable ecosystem values exist) and a *receiving area* (where increased development is considered more suitable). This tool may be valuable in shifting density from an area of high conservation value to an area considered less valuable for conservation or more suitable for higher density or clustering.

**Regulatory Tools**

The Island Trust has historically relied on regulatory tools for land us planning. Such tools include zoning bylaws, development permits and subdivision.

**Zoning Bylaws**

Zoning bylaws control four major aspects of settlement: location (by creating distinctive zones), use (what can and cannot occur on land), density (the size and number of buildings that may be constructed) and siting (the location of buildings and other structures, including setbacks). Zoning is established in the zoning or land use bylaw.
Zoning bylaws can include setback provisions that require buildings, parking lots or other uses to remain a certain distance from a specified boundary (such as the high water mark or a property boundary). This can be used to protect stream corridors or other natural features from development.

During re-zoning negotiations, some areas may be developed at higher density in return for the protection of environmentally sensitive areas.

Zoning bylaws can establish Comprehensive Development Areas for large or complex sites. This means development on that site will be considered in its entirety, rather than looking at piecemeal development of the property. This allows for careful site planning to protect environmentally sensitive areas.

**Development Permits**

Development Permit Areas are identified on the land as areas that can only be developed in accordance with specified guidelines. Development cannot occur in these areas until a development permit has been obtained.

Development permits can establish special requirements that apply to development or redevelopment of an area, including the preservation, protection, restoration or enhancement of the natural environment, its ecosystems and biodiversity.

As with any tool, development permits have their challenges. Although legislation states that land requiring a development permit cannot be altered, subdivided or built upon without a development permit, exceptions may apply. Development permits cannot always protect things such as natural features. More importantly, development permits do not prohibit development; rather they allow it subject to certain stated guidelines.

**Subdivision Approvals**

In the Islands Trust Area subdivision proposals must be examined and approved by a Municipal or Provincial Approving Officer to ensure that it conforms to the *Land Title Act* and local bylaws.

To protect natural areas, the Approving Officer may refuse to approve a subdivision that is considered “against the public interest”. This could include refusing development in an environmentally sensitive area (if sufficient cause can be shown) and insisting that covenants be placed to protect environmentally sensitive areas.

A developer who subdivides more than three lots is required by law to dedicate 5% of the subdivided land as park or provide the Islands Trust with cash in lieu of the land donation.
These tools help to regulate land use by defining permitted uses and designating areas for development.

**Voluntary Tools**

The two voluntary tools traditionally used by the Islands Trust have been voluntary land donations and voluntary conservation covenants.

**Land Donations**

The Islands Trust can receive donations of land. Once on title, the Islands Trust manages these properties as nature reserves. The Islands Trust may also purchase land, although the latter is becoming increasingly difficult due to rising property prices.

**Conservation Covenants (Easements)**

A conservation covenant is a voluntary written legal agreement in which a landowner promises to protect the land in specific ways. The covenant is registered on the title and runs with the land in perpetuity. Covenants are often attractive to landowners as they achieve protection of the land while maintaining ownership of the property and the right to dispose of it as they wish.

**Natural Area Protection Tax Exemption Program (NAPTEP)**

A new tool that the Islands Trust currently has available is the Natural Area Protection Tax Exemption Program (NAPTEP). This is a special incentive program for landowners who place a conservation covenant on their land. Landowners whose applications are approved receive a 65% property tax exemption for the area of land covered by the covenant.

**Stewardship Education**

Public education will always be a key component for realizing conservation goals. Many of the priority areas identified in a regional conservation plan will never be protected by relying exclusively on the tools described above. It is therefore critical that the Islands Trust continues to work on educating the public about actions they can take themselves to protect and steward their land and its special values.

**Partnerships**

Partnerships, though not necessarily tools in and of themselves, are critical to success. They are required to implement all of the tools mentioned above.
The Islands Trust has achieved many of its successes through active partnerships with many of the island and regional conservancies. They will continue to coordinate with and support these groups with landowner contact, covenants, fundraising for acquisitions and stewardship education initiatives. The benefits that the Islands Trust receives from having these groups as partners in conservation are immeasurable.

**Adaptive Management**

Adaptive Management consists of undertaking an action or set of actions, evaluating the effectiveness of achieving the goal, modifying the action if it is not achieving its intended results and using the information from early efforts to guide later efforts” (Brown et al., 1998). It is generally described as an ongoing series of events that continue to feed into the planning process.

In order to build this feedback loop into the Islands Trust’s work program, the following steps are undertaken at the beginning of every fiscal year:

**Step 1: Gather and Assess Data**

The first step in adaptive management is recognizing that the islands are dynamic systems that are in constant change. The Islands Trust has committed to update the information that is known about these islands. The Islands Trust will continue on a yearly basis to gather new information and adjust its goals and objectives based this new information. Such new information will include:

- current status of protected areas
- known loss of natural ecosystems
- known threats and opportunities
- evaluation of the management of owned Islands Trust Fund Board lands
- evaluation of the effectiveness of the tools that are being used to achieve the objectives outlined in this document

**Step 2: Revise Measurable Goals**

As new information is gathered regarding the Trust Area, the goals identified in previous iterations of the Regional Conservation Plan may need to be reviewed and possibly altered.
Step 3: Implement the Plan

Based on the new information that is gathered, in some circumstances it may be necessary to deviate from what has been set out in this Regional Conservation Plan. In each case a clear rationale should be available to support the change.

Step 4: Monitor

Monitoring is critical to success of the Regional Conservation Plan. On a yearly basis the Islands Trust will examine its progress in achieving the Plan’s goals.

Step 5: Evaluate

Based on the information gathered in Step 4, the Islands Trust will evaluate its effectiveness in achieving the Regional Conservation Plan’s goals. Issues and barriers to success, as well as solutions to these problems, will be discussed and documented at this time.

Step 6: Adjust

Adaptive management is about using the information gained through the preceding five steps to adjust goals and objectives and to make decisions based on the best available information. It is therefore expected that in doing Steps 1 to 5, the goals and objectives will be reviewed and incorporated into a work program for that year.

The Islands Trust will evaluate its success at achieving the Regional Conservation Plan’s objectives in 2010 and set new objectives for the subsequent five years.

Conclusion

In conclusion, sustainability on these Islands will only be achieved through a concerted effort by the Islands Trust. This area is at a critical junction: unsustainable growth will continue to degrade these ecosystems and result in a loss of these islands’ life support functions. In order to change this destructive path, the Islands Trust must use all available tools to achieve the goals of the Regional Conservation Plan while maintaining flexibility so as to respond to new information. A strong vision is required to determine how this community will proceed in the next year, ten years and beyond.

The worst thing that can happen is not energy depletion, economic collapse, limited nuclear war, or conquest by a totalitarian government. As terrible as these catastrophes would be for us, they can be repaired within a few generations. The one process ongoing that will take millions of years to correct is the loss of genetic and species diversity by the destruction of natural habitats. This is the folly our descendants are least likely to forgive us. (Wilson, 1992)
References


Productivity Versus Creativity: Cultural heritage, Ecology and Economy in Tasmania’s Forests.


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The ability to achieve sustainability is a product of cultural heritage, or ho’ahanohano, the relationship that a society creates between po’okela, its economy, and malama’aina, the ecology to which it belongs.

Sustainable Islands are those that maintain the health of their eco-systems and thus provide present and future generations with undiminished opportunity to live fulfilling lives. But there are not many of them.

Many islands have been able to achieve a temporary affluence, through over-exploiting some resource, like sandalwood in the case of Hawaii, or cod in the case of Newfoundland. In Tasmania we took 60 years to bring the Southern Right Whale to the verge of extinction, and now we are rapidly clearfelling our old growth forests in our timber production areas, to supply the woodchip industry, at a time when the woodchip export market is declining and logging contracts are not being renewed.1

So far, sustainability seems to be an aspiration rather than a common achievement, but it would be short sighted to simply equate sustainability with pre-industrial society, or to blame modern technology alone for the rapidity with which we are making survival on this planet more difficult. Mesopotamia, and Easter Island are only the most dramatic examples of pre-industrial un-sustainability2.

But it remains true that in modern times, island societies such as those of Iceland and Ireland in the northern hemisphere, and many Pacific island territories, have drawn inspiration from their traditional cultures in achieving successful recoveries from poverty and dependency to pride and prosperity.

Tasmania has not been so fortunate. The colonists who claimed possession in 1803 were unaware that the indigenous inhabitants had already established a world record for small island sustainability, by their successful cultural development over a period of at least 20,000 years. Unlike the Maoris of New Zealand, Tasmanian Aborigines were denied recognition as landowners, and their rapid population decline was regarded as a fortunate natural process. By the mid 19th century it was assumed that they would shortly cease to exist as a people.

Tasmania was promoted in the London international exhibition of 1862, as a country “exempt from peculiar diseases, from dangerous wild beasts and from hostile Aborigines.” Statements like this were indications of a radically new relationship between the human species and the ecosystems of Tasmania. George Whiting, secretary and publicist of the exhibition, wrote of an island, “whose ‘Manifest

1 See The Mercury, Hobart 13th May 2006, “Gunns Axe on Logging Deals” article by chief reporter Sue Neales, who reports a 40% cut in purchase contracts for woodchips in the previous 12 months

Destiny’ it may be to work out an original phase of social, moral and material progress from the new conditions of race, climate, position and productiveness in which they fortuitously find themselves.3

The heroic vision of colonisation as a Christian Duty is a common thread in western culture,4 but it took exceptionally strong roots in Tasmania because the process of clearing land, building houses, establishing farms and orchards and establishing an idyllic patchwork landscape of small settlements, green fields and scattered farms, was seen as a process of redemption from a convict past of horror and human degradation.

**Huon Valley View**

In the period that led to the abolition of the transportation system in 1853, historian Anne McLaughlin argues that, “The theme that convicts were the real basis for the colony’s development was constantly repeated. It had been the task of convict labour to “raise buildings upon waste land, and to convert barren wilderness into a garden”5

When the convict transportation system ended 57% of the island population was of convict origin, but once achieved, abolition was celebrated in Tasmania by a century of denial. Convict ancestry was hidden not only in public, as Tasmanians came to pride themselves on the safety of their community and low rates of crime compared with other Australian colonies, but in private as well. It was not until the 1970s that young adult baby-boomers began to delve with enthusiasm into their family histories, and that having a convict ancestor became a badge of distinction.6

The century of silence after 1853 was the century in which the moral duty of resource exploitation became deeply entrenched. At the same time an anxiety to forget the past undermined the kind of conservatism that carries with it a sense of responsibility to protect natural systems and the choices of future generations.

World war two was followed by an expanded demand for housing materials at a time when Tasmanian forests had been depleted through war-time demand and lack of regulation; and in the 1950s, Max Gilbert was set the task, by a re-vitalised Forestry Department, to research the best method to achieve the regeneration of fast growing Eucalypts, especially in the wet temperate state forests, characterised by a rain-forest understorey and a eucalypt canopy. Gilbert’s thesis became the founding justification of the management technique known as “Clear-fell Burn and Sow”, by which mixed Rain-forest-Eucalypt old growth forests are clear felled, Eucalypt sawlogs and pulpwood are removed. The residue, including many rain-forest species, is burnt to create an ash-bed to encourage re-growth. Eucalypts only are then sown from the air, and the idea is to repeat the cycle every 90 years though for pulp production the rotation period is often 40 years or less. The technique is thus a process of ecological conversion.

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4 White, Lynn, *The Historical Roots of our Environmental Crisis*, *Science*, March 1967, 1204, ff
Gilbert warned his readers of the risks. Rain forest species that might be extremely valuable to future generations would be, for practical and commercial purposes, progressively eliminated. However, he added, “the problem has to be looked at in the light of demands for wood now, in 1958”7.

**Show process pictures**

By this time the generation that became interested in its convict ancestry was growing up, and reached maturity at the dawn of “The Age of Aquarius” which was also the time when the Tasmanian Hydro-electric commission became an unelected force in Tasmanian politics that had no parallel since the end of the convict era. Hydro-industrialisation was accepted by most Tasmanians as the considerable technological achievement that it was, and the large-scale borrowing it required was seen as necessary investment to achieve population growth and employment.

Contrary to the views of those historians who regard the convict system as the root of Australian egalitarianism, and what is left of our democratic values, other scholars have found in it the roots of an a-political deference to authority.8

This may partly explain why the Tasmanian Labour party was the political force behind industrialisation under state control in the 1940s and beyond, and maintains close links with the part-privatised successor of the Hydro-electric Commission, Hydro Tasmania; with Forestry Tasmania, the corporate body descended from the Government department of Forestry; and Gunns Ltd, the company that now dominates the industry and contributes heavily to the electoral funds of both Labour and Liberal parties.

Ideological opposition to booster style development only became part of Tasmanian politics in the 1960s when it was discovered that the Hydro-Electric Commission had plans to dam Lake Pedder, a famously beautiful feature of a recently declared National Park. Only one Member of Parliament Louis Shoobridge, understood the motivation of the initial fragment of the Tasmanian population that opposed the flooding of the lake. He said:

*It was from a height of about 2000 feet I suppose in the aircraft that I caught sight of it and I think it was then that I realised the enormity of what the state was going to do. I felt ----Like the man who comes face to face with Christ for the first time. ---He realises that he has to make a decision. It was no use----going home and saying its still expendable. It wasn’t to me any more expendable. I had to think quickly what on earth I could do.*9

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Lake Pedder C 1960

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7 Gilbert, John Maxwell, Eucalypt-Rain-forest relationships and the regeneration of Eucalypts, Ph.D thesis Botany Department University of Tasmania 1958, p.235


Shoobridge exemplified the spiritual element that came to characterise the Tasmanian Green Movement, and the political organisations that it produced. These included the United Tasmania Group, the first green party in the world to contest a parliamentary election, the Wilderness Society, and the Tasmanian Greens party that has sent members to Parliament continuously for the last 16 years.

A Green philosophy, at the polar opposite of the vision of nature as a mere source of wealth and human benefit, is now an important component of Tasmania’s Ho’ohanohano. It has world famous champions like Senator Bob Brown and Martyrs, like Brenda Hean, who died in 1972 in an aeroplane accident that was almost certainly the result of sabotage following a telephoned death threat. Lake Pedder was lost, but the lesson of defeat was to widen the context to include the rest of Australia and the world, and that strategy brought success in preventing the damming of the Franklin river in 1983, gaining the support of the United Nations and the Australian Government in gaining World Heritage status for the South West “wilderness” and stopping the construction of a pulp mill at Wesley Vale in 1990. Since then a major aim of the movement has been to end clear-felling in all old growth forests and to extend areas of conservation.

Wilderness society street demo

The philosophical thread that binds these aims together is the belief that “human material needs do not need to have pre-eminence in the world; that the natural world has a right to exist apart from its use-value to humans.” Unfortunately, the ideological distance between Tasmania’s two philosophical polarities has made dialogue of the kind that can lead to workable compromise extremely difficult, as cultural difference is currently defined by the fight to save old growth forests from further destruction.

The reaction of the Liberal and Labour parties in 1998 was to combine to reduce the number of members of Parliament so as to make the quota required under the Hare-Clark system too high for the Greens to reach. This had the effect of reducing the Green members from five to one, in spite of retaining most of their vote.

But like the Tasmanian Aborigines, the Greens were not exterminated. The next election, in 2002, returned four of them, and they retained their seats at the last election in March 2006.

Outside Parliament, the conflict is ugly. Gunns, the company that has effectively taken the place of The Hydro-electric Commission as Tasmania’s House of Lords, is currently suing 20 activists, including Bob Brown, Senator and leader of the Australian Greens and Peg Putt, Leader of the party in Tasmania, an action widely condemned as an assault on free speech. On the streets of my local town the car stickers document social tensions with opposing slogans, Create Work: Doze/e.i. bulldoze a Greenie, Greens Tell Lies, and on the other side, So Sue Me, and a twisted gum leaf, otherwise strongly resembling the logo of Forestry Tasmania with the single word, CORRUPT, beneath it.

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10 Ibid. p.27.
It is in this context, in 2002, that a group calling themselves Timber workers for Forests came into existence. They made it clear that their concern was not to increase the areas of forest to be withdrawn from timber production, but to stop them being clear-felled so that they can provide society with all their products, including environmental benefits, for ever.

**Slide of Old Growth forest**

Graham Green, our founding President is a shingle splitter and wood craftsman, and a former member of Timber Communities Australia, the well funded organisation that represents the industry. Graham became disillusioned with it because it gave unqualified support to a system of forest management that was systematically depriving him of the mature timber he needed for his livelihood.

So Graham phoned a few people who earn their living by using local timbers from the rainforest understorey and invited them to come to what became our inaugural meeting at the “Longley International Hotel”, an establishment that in spite of its impressive name and considerable elegance, is a country pub at Longley, a hamlet of some 50 souls, half way between Hobart and the southern forests. It was the beginning of a journey of philosophical discovery as well as a plan of action.

**Longley international Hotel**

We discovered common ground and a tradition we shared between regions and cultures both in Tasmania and the wider world. We claim inheritance of a continuous minority tradition of forest practice that is as much a part of our Ho’ahanohano as the heroic vision of conquest of nature that has inspired our governance since 1803, and the Green Vision of modern times.

We are disenchanted by what has been described as “The myth of a ‘pristine ‘ wilderness, somehow outside the ambit of human endeavour,” that gained currency within the Wilderness Society, “outraging Aboriginal people whose ancestors had lived in the south-west, and had shaped that environment over a period of thirty thousand years”\(^\text{12}\)

We share the indigenous Tasmanian view that:

*The Forest is not Trees. A forest is the entwined lives of people, animals, birds, bees microbes, wind rain, sunshine and history. It is a source of food, shelter, enjoyment and stories.*\(^\text{13}\)

Like the Aborigines, we recognise that forest health and human community health are interdependent. If you simplify one, you simplify the other. We perceive that after a forest has been clearfelled and burnt, it is not the forest that is re-planted, but trees, and it is only if a plantation were to go through a long and repeated cycle of growth and decay for maybe 400 years that something like what was destroyed could exist

\(^{12}\) Pybus, C. *The Rest of the World is Watching*, p.65.

again in the same place, with the same range of species and maturity that guarantees sustainability. Like our forebears, both Aboriginal and Colonial, we seek to live on the interest annually available from our vanishing areas of true forest, without damage to the natural capital they represent, or the generally un-costed ecological services that they provide.

We have experienced extremely wide public support for the solutions we recommend, but not from the Government or the industry, so I have sought for an historical explanation.

**Map of southern Tasmania.**

In the Huon Valley of southern Tasmania, where many of us live, whaling gangs and timber getters were the first settlers, followed by free settlers and their convict servants in the late 1830s. Some convicts fled, joined Aboriginal communities, and founded families that now identify as Aboriginals, and some of them are saw-millers and forest workers. Like their often Irish ancestors as well as their Aboriginal forebears, they had good reason to oppose the dominant hierarchy of Colonial Government.

Robyn Friend interviewed some of their descendants for her book, *We Who Are Not There*. One of them said, “I suppose in a way we’re a whole new tribe of people, but we’re still living in the same place on the same ground as our very ancient forebears. But outside our own community we don’t count, and we’re not black enough, or so they say.”

Another, like many aboriginal people in the Huon Valley, was a small sawmiller. “They did it well too,” he said, “they were careful in what they took and they were neat and tidy. They didn’t make a mess of the bush.”

Until the end of the 19th Century, the timber business stayed in the hands of small operators, but in 1898 the Crown Land Act was amended, to allow investors 21 year leases of timbered crown Land in return for a guarantee of large scale investment, thus establishing the present framework of Tasmanian forest management, and excluding local saw millers from consultation.

The southern forest region of Tasmania provides a good illustration of the long-term consequences for Tasmania as a whole. Among the first to take advantage of the opportunity in 1902, was Robert Affleck Robinson, still remembered locally as “Flat Earth Robinson” because of his scientific beliefs. Mistaken as he was, he was an expert at booster politics and public relations, and succeeded in establishing the Huon Timber Co at Port Huon and turning Geeveston, founded in 1839 by the Geeves family, and their convict servants, into a Company town.

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15 Friend, p.53
But the company didn’t do well. It was sold in 1911 for a third of its original value. Under new ownership it went down hill and never made a profit after 1920. It never ever paid a dividend and was wound up in 1929 with a loss of a quarter of a million pounds.

The only opponents of the scheme were some small saw millers who said, that they objected to big business “Taking over all the country” when their own requests for special reserves had always been refused.17 They were ignored, but they went back into the depleted forest the company left behind, with their bullocks and wooden railways, and pit saws and broad axes, having beaten the over-capitalised competition in the struggle for survival.

The rise and fall of the Huon Timber Company established a pattern of alliances between Tasmanian governments, regardless of ideology, and large investors. There have been brief periods of prosperity, but they have been followed by disappointment, leaving behind a bitterly divided community, ripe for the next round of promised wealth and security, that never comes.

Forest management, as opposed to semi-regulated exploitation, began in 1920, when a Forestry Act created jobs for a Conservator and a small staff. The Conservator reported that, “The regime of laissez-faire had become so firmly established that any mention of control or restriction was regarded as heresy of the most dangerous order”.18 Credibility suffered in 1941 when the Minister for forests was found by a Royal Commission, to have accepted bribes from a mainland timber company in return for a favourable deal to establish a sawmill and plywood mill in the North-west. The minister was rested for a while in New Zealand, but soon returned, and was re-elected to the Legislative Council, where he served as Government leader for the next 20 years.19

That scandal was followed by the establishment of the Forestry Commission in 1947, but the emphasis on large investment and high volume extraction was now entrenched. In 1954 a bill was passed that allowed the Commission to sell logging rights within 105,000 hectares of southern forest, to Australian Paper Manufacturers Ltd, or APM and they built a pulp mill at Port Huon.

At its peak the mill employed 170 people, but the first retrenchments came in 1968, followed by a brief shut down in 1978. Workers voted to work shorter hours to avoid retrenchments, but in August 1982 the mill closed for 6 weeks, and then closed again on Christmas Eve with the verbal promise that it would open again in 1984. It re-opened briefly from 1986 to 1991, and then closed for good.20

A pattern of raised hopes, anxiety and social tragedy was now clear. As one resident of Geeveston explained ten years later:

18 Dargavel, Op.Cit. p.177
Geeveston has had a lot of promises made to it and not too many of the have been fulfilled. Everyone hung their hat on A.P.M. re-opening for years, but that was never going to happen. There has been a combination of loss after loss after loss, creating an entrenched feeling of being losers.  

The next scheme was a plan by Australian Newsprint Mills to build a woodchip mill at Whale Point under the banner of Huon Forest Products, and Liberal Premier Robin Gray approved construction in 1987.

The political effect of this was an alliance between Labour and the Greens, which was also supported in its formative months by small saw millers who gave evidence of outrageous waste to a Commission of Inquiry in 1988, and gained influential support: The Advocate editorialised,

_These men are not the smooth, articulate and media experienced protagonists from the opposed forest industry and conservation lobbies, so often seen on T.V. and quoted in the print media ----it is perhaps appropriate to remember that it was the pioneer timbermen, with their axes and cross cut saws--- scattered in the forests of Tasmania, who laid the foundations of the present industry. Those days of course are gone, but there are still surely strong arguments for a fair go for the remaining small millers._

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At a meeting held in the village hall of Ranelagh in November 1988, and attended by both Labour and Green politicians, Timber craftsman Tony DeLara put a case for a value-based timber industry under local control rather than a volume based industry that destroyed ecological complexity and local economies. He claimed that the craft industry, using special timbers employed 1000 workers, used 25,000 cubic metres a year to produce goods worth $100 million, adding value at a rate of $4000 per cubic metre, while the woodchip industry employed 350 people, used two and a half million cubic metres a year, and still only earned 150 million, adding a value of only $60 to each cubic metre. The chip mill proposal was the sign of an industry going to fast, too far and being too greedy.

In May 1989 the Labour/Green accord was signed, with the condition that the woodchip mill would be stopped, resulting in something approaching civil war in the Huon. Some still hoped to find common ground, Athol Meyer, Liberal Legislative Councillor for the Huon, promoted a Wood Skills Centre, promised as compensation for loss of loggable forest to the World Heritage Area after the enquiry of 1988, but never delivered. Meyer said it would be based on a conjunction of specialty timbers and local skills, “Teachers, Parents, those with jobs and those looking for work, craft workers, greenies and anti-Greenies, this is one idea that everyone should support”

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23 The Advocate, 27th January 1988
25 Huon News 13 October 1988
It was a moment when, had the captains of industry blinked, we might now have a forest industry we could all be proud of, but they were steadfast in their determination not to give ground, and they were aided by a new strategy borrowed from corporate America, the use of so-called “Grass Roots Movements” to push corporate agendas. Ron Arnold, champion of the “Wise Use” movement explained how it worked:

A local Citizen’s group can do things industry can’t. It can speak as a group of people who live close to nature and have more natural wisdom than city people. It can provide allies with something to join, some place to nurture that vital sense of belonging and common sense. It can build emotional commitment among your allies; it can build coalitions to build real political clout. It can evoke powerful archetypes like the sanctity of the family, the virtue of the close-knit community.  

In Australia, the quaintly named Forest Protection Society, founded in 1987, was already the very model of a grass roots industry front group, with 80% of its funding coming from industry. It’s now called Timber Communities Australia. With this cleverly disguised backing, Industry saw no need to settle for a compromise with anyone.

Loggers Demonstration in Launceston

The search for overseas investment continued. In February 1995 Premier Ray Groom told the media that, “after considerable effort,” his Government had gained the interest of Fibreform Wood Products Inc. of California in establishing a saw mill and wood panel plant at Whale Point, to employ 200 people.

Opposition came from the Southern Forests Community Group, perhaps our most effective predecessors. They were an alliance of woodworkers, bee-keepers and small saw millers who feared that a large industrial activity needing only eucalypt pulpwood would ensure the destruction of the remaining mixed forests in the south within a short period. They proposed as an alternative, a Community Forest. A board of management representing all interest groups, would take control of the 35,000 Hectares of Old growth Forest then remaining in the South, and would employ a variety of harvesting methods to ensure that each forest type would be sustained for ever.

Unpredictable market conditions, and perhaps rumours of Tasmanian opposition, were sufficient to put Fibreform off, but not to persuade the Government to change its philosophy. In May 1995 the Huon News carried the Headline, “Fibreform Pulls out.” Nothing daunted, the Premier promised that the century old search for a large downstream processing plant would continue, because “There has been a lot of disappointment, people’s hopes have been raised so much.”

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28 Southern Forests Community Group, *The Regional Forest Concept, A Discussion Paper to address community concerns and to inform the Southern Forests land use strategy*, Published by Rex Direen, Nicholls Rivulet, June 1995
View of the Southwood site

The preparation of an “investment ready” site called Southwood to entice investment was next, in 2002, by which time the area of Old Growth in the timber production forest in the Huon district had shrunk from 35,000 ha in 1995 to 15,000 Hectares. The announcement caused bitter community division, followed by disappointment as the years have passed and the promised numbers of jobs have failed to materialise. It was soon after that that Timber Workers for Forests was formed. Some of us had been members of the Southern Forests Community Group, but for most members it is the first experience of political activism.

We decided to adopt a rational approach. We reasoned that if we could present evidence to Forestry Tasmania that the clear felling of the remaining old growth forests was wasteful, was costing Tasmanian jobs, was causing irreversible damage to future supplies of the timbers on which we depended, and could be reversed without loss to industrial forestry, they might be persuaded to change harvesting methods in old growth forests while there is still some of them left outside the world heritage area.

We called a press conference in April 2002 to announce the first of a series of research papers, an audit of a recently clear-felled coupe in the southern forests, written by our President Graham Green who has a Ph.D. in science and lives partly from scientific research and partly from shingle splitting. Members of our group who have experience in identifying and using Tasmanian timbers, and some who have post graduate research and supervision experience provided assistance.

The paper quantified the amount of timber left on the ground to be burnt, and the volume of the species that would thus be wasted. It made recommendations for waste reduction on the site in question, and policy recommendations to avoid similar waste in the future.  

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Before publication, comment was invited from Forestry Tasmania, but none was received. When our work was given notice in the press, Paul Lennon, then Minister for Forests, identified us as, “The Usual Suspects”, a title that does have a certain historical resonance. Another paper followed in July 2002, detailing the jobs lost in the forest industry since 1990, It contained recommendations for alternative job creation in the selective logging of specialty timbers, and further development of training opportunities in alternative forest management and wood skill based industries such as furniture and wooden boat building.

A third paper moved from criticism of current practice to a resolution of conflict in the Tasmanian community and the creation of a policy that would allow for the satisfactory pursuit of all competing interests, based on the best interests of the forests themselves. A consultation draft was circulated to special timber sawmillers for

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31 Graham Green *Tasmanian Timber industry Jobs* Vol 1 June 2002
comment. Our members conducted a series of public consultation meetings throughout Tasmania, and held discussion meetings with local foresters in the Huon district. No-one at executive level in Forestry Tasmania responded to our requests for feedback. So in July 2002 it was published, with the title, *Tasmania’s Specialty Timber Industry: A blueprint for sustainability*. It too is on our website.

The political reality of the lead-up to the 2004 Federal election was that the conservation of the Tarkine Wilderness in the north-west of the island would be achieved whichever party won power, thus halving the area producing rain forest timbers.\(^{32}\)

The Blueprint anticipated that this would happen, and therefore identified 180,000 hectares of mixed forests containing an understorey of special timbers throughout Tasmania as an alternative source. Selection was restricted to areas that conformed to these criteria:

- Where rainfall is above 1,300 mm
- Sites below 600 mm
- Sites with a Eucalypt height potential greater than 34 mm

Publicly available maps and other sources were used to construct a domain including mixed forest sites sufficient to maintain a range of high employment and value adding industries without compromising either conservation values or the existing pulp industry.

**Map of recommended areas for special timbers**

We have continued to work politically through staging demonstrations, writing to newspapers, building alliances with other pressure groups, documenting continued malpractice in the forests and talking to politicians. As David Milne taught us six years ago, “no jurisdiction has been successful with a program of economic transition and diversification if its political system and public administration have not made themselves *part of the solution rather than part of the problem*”\(^{33}\)

Before the recent State election we prepared a statement about our aims and sought interviews with the forest spokespeople for the three main parties.\(^{34}\) Peg Putt, Leader of the Greens, had decided to broaden the party’s forest policy to include our concerns, and was prepared to take advice from our “Blueprint” on areas to be set aside for special timber production. She would not consider including the Weld valley, however, a contentious area in the Southern Forests, to the disappointment of some of our members, but we are prepared to compromise.\(^{35}\)

Bryan Green, for the Labor party was sympathetic and diplomatic, but made no commitment. Will Hodgman was the only member of the Liberal party who agreed to

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\(^{32}\) Graham Green, report to TWFF Committee meeting, September 21, 2004.


\(^{34}\) Young J. *Introducing Timber Workers For Forests: Who we are, what we do, why we are important and how we want Tasmania’s forests to be managed* February 2006, [www.twff.com.au](http://www.twff.com.au)

\(^{35}\) Compromise is not the word we would choose. We would argue that human inclusion in the natural order means our interests are protected by the principle of the intrinsic value of ecosystems.
see us, but said that we should seek a meeting with the leader, Mr Hidding. We tried, but were told he was too busy to see us.

We left an identical document with each representative and it can be seen on our website. In the election of March 2006, the Liberals suffered because of the lack of difference with the Labour Government, which was returned with a reduced majority, but the Greens failed to gain enough seats to give them the balance of power. Will Hodgman became the new Liberal leader, signalling a generational change in the party, and his response to a draft of this paper foreshadows changes in Liberal forest policy during the life of the current Parliament.36

Tasmania is still in an excellent position to develop a small-scale wood industry based on the traditional skills of the people and the qualities of its unique range of special timbers. They are unique because they grow so slowly, making them close grained and therefore stable and durable; light and beautiful in the case of Huon and King Billy, and beautiful and heavy in the case of Celery Top Pine, Myrtle, Blackwood and Sassafrass, Native Olive, Cheesewood and Mountain Ti-Tree.

The Minister for Forests has accused us of being greedy, but we ask merely for a fair share of the remnant of a once plentiful resource. We have no objection to a sustainable re-growth industry, or to pulp production. but we see no reason for these goals to be achieved at the expense of a range of industries that provide creative interesting work and that contribute to the ability of Tasmanians to believe in themselves, and the image of intelligence and talent that they attempt to present to the world.

Picture of pretty wooden boat

Let me conclude with a parable. Eco-Forest is a company established in New South Wales some years ago to re-convert cleared land, not to a single species plantation but to a replica of a pre 1788 natural forest.37 The idea was that the first profits would flow from early thinnings of eucalypt timbers such as Ironbark, Tallow wood and Spotted Gum. Early income was anticipated from the rent of cabins where people could enjoy a restful holiday and participate in the re-birth of their heritage. Future wealth was anticipated from eucalypts that would be selectively logged, in around 40years, and continuing, in step with replacement, to eventually include trees up to 400 years old. By then the really valuable stuff, the New South Wales Cedar, would be an increasing part of the annual mix, and command prices commensurate with its scarcity and quality. Craftworkers would be able to make the finest furniture and the most beautiful boats in the world from the wood produced. And all the time, the value of the visitor experience and of the land itself would increase as world sources of high quality timber and spiritual solace continue to diminish.

In Tasmania we don’t have to wait 400 years to reap these benefits. We still have mature production forests. We are 400 years ahead if we choose to be. All it needs is economic wisdom and good political leadership. Wish us luck.

36 At the time of writing this assurance is in the form of a confidential e-mail.
37 www.ecoforest.com.au
Living beyond ‘collapse’ on Easter Island

An anthropological approach to the sustainability discourse

Deborah L. van den Berg

Abstract

Frequently discussed subjects of recent discussions in scientific literature about Easter Island are the ecological devastation that reached its peak in the 15th century, the collapse of the Rapa nui culture starting in the 17th century and the lessons to be learned for our Earth. Interesting theories of great significance have been developed, such as Diamond’s *Easter’s End* (1995) and *Collapse: How Societies Choose to Fail or Succeed* (2005), but I would like to take the discussion back to Easter Island itself.

In this paper I describe the natural environment of Easter Island, as encountered by Katherine Routledge in the beginning of the 20th century and important events in the recent history which have affected the nature of the island. Easter Island has opened up to the rest of the world. These new relations have caused profound changes in the local society and the natural environment.

With the development of tourism on Rapa Nui other actors have taken an interest, like the Chilean state, international trade and international organisations. In 1995 UNESCO (United Nations Educational, Scientific and Cultural Organisation) declared the island a World Heritage Site. Policies were designed to protect and preserve the cultural and natural heritage. I would like to discuss the contents of these policies and their sustainability, as well as the strategies and management plans made by the Chilean state and national and international organisations. What is their significance to Easter Island and its people?

This article should be the start of a new study on the relationship between the islanders and their natural environment. The emphasis of the study will be on the actions the islanders undertake to protect and conserve their habitat. After all, the geographical isolation still exists and other natural resources are not within reach. Have they themselves learned from their past?

Rapa Nui in the 20th century: Changing politics affect the island’s nature

Many studies have been made about Rapa nui’s history, especially about the arrival of the first settlers and what they brought with them, the Moai-building period and the ‘societal collapse’. To understand the idea of ‘living beyond collapse’ I will first take a closer look at Diamond’s theory.

Diamond defines a ‘societal collapse’ as the large-scale breakdown or long-term decline of the culture, civil institutions, or other major characteristics of a society or civilization, on a temporary or permanent basis. There are a host of variables and reasons which may contribute to societal collapse,
and contributing factors may be natural (e.g. environmental), artificial, or a combination of these. Societal collapse may occur over a relatively short period of time, or as a result of an event or series of events which lead to significant depopulation (e.g. natural disaster, war, disease, genocide). The groups which comprise a society may also make a deliberate or voluntary decision to disperse or relocate which in effect amounts to the "collapse" of that society, or presents to later archaeologists or researchers as a collapse. Societal collapse has recurred throughout history and is an aspect of the human condition which may await all human societies. The modern day interest in survivalism is concerned in part with preparing for the possible collapse of contemporary society. Following from this Diamond distinguishes between civilizations or societies which have collapsed (Maya, Soviet Union) and sites which are believed to represent ‘societal collapse’. Easter Island belongs to the latter. Forest destruction led to environmental degradation which ultimately led to the breakdown of the society around the 17th/18th century, when the Rapa nui people were not able anymore to build fishing vessels and the vegetation of the island altered drastically. Restless times arose, wherein food was scarce and the social structure swayed. Diamond even speaks of cannibalism in this period. Internal warfare between clans ultimately saw the destruction of ceremonial platforms and toppling of Moai. Around the 16th/17th century the Rapa nui developed new traditions to allot the remaining resources in the Birdman cult (in Rapa nui Tangata Manu). Every year a competition was held at the ceremonial village of Orongo on top of the volcano Rano Kau between Hopu Manu (young trained men that represented their clan) of different clans. The cause was to get hold of the first laid egg from the Manu Tara (sooty tern) of that season. The first competitor to bring back the egg, assured his clan of control over the distribution of the island’s resources for one year. The Tangata Manu cult was accompanied by many rituals and taboos and held on until approximately the 19th century (Wikipedia, 2006). Jan Boersema speaks of a transition from a rich culture into a scantly culture with a treeless environment. This new equilibrium could have been sustainable in an ecological, social and religious way, but the discovery of the island by Europeans and the international attention drawn to the island afterwards disturbed the new system. Boersema points out the period between 1860 and 1880 as a dramatic climax in the external violence against the Rapa nui, when Peruvian slave traders captured hundreds of Rapa nui to use them as slaves on plantations and in the guano industry, and considers ‘collapse’ also appropriate in this context (Boersema, 2002: 12-3).

Chilean ships had called at Rapa Nui from as early as the 1830s, but serious contacts began in 1870. On 9 September 1888, Capitan Policarpo Toro Hurtado signed a deed of Cession and another of Annexation with the chiefs of the island. The treaty is in both Spanish and a kind of Rapa nui. After being declared Chilean territory, the Chilean Government put Easter Island under the administration of the Navy (McCall, 1995). And with the idea of administering Easter Island as a colony, the territory of the island was rented to Williamson Balfour, a British company, in order to exploit it as a sheep hacienda (Rapa Nui Central, 2005). The owner of the company was Enrique Merlet, who took a strong lead which eventually led to the killing of the last king of the island, and the murder deportation of any opposition. Merlet’s ambition to exploit the island did not have limits. He damaged plant and animal life unforgivably. It was at this time that the islanders were forcibly herded into Hanga Roa, where they remained as prisoners on their own island until 1966 (Hotus, 2005). Now I would like to focus on Easter Island’s natural environment in the 20th century, starting with the observations of Katherine Routledge during her stay from 1914 until 1915.

‘As we approached the southern coast we gazed in almost awed silence at the long grey mass of land, broken into three great curves, and diversified by giant molehills. The whole looked an alarmingly big land in which to find hidden caves. The hush was broken by the despairing voice of Bailey, the ship’s cook. “I don’t know how I am to make a fire on that island, there is no wood!”’ (Routledge, 1998: 124, emphasis added).

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4 Katherine Routledge organized her own expedition to Easter Island with her husband Scoresby and later published her conclusions of her ethnographic research. For more details, see Routledge, K. (1998 ©Copyright 1919) *The Mystery of Easter Island*. 

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Like other European voyagers before them, Routledge and her men were confronted with an island with almost no trees and Routledge noticed erosion all along the coastline. While on the land side the slopes of the three biggest mountains were gradual, on the sea side they were worn back by the power of the waves into imposing cliffs. In some instances the crater of a mountain has become a lake. These lakes were almost the only water-supply of the island: there was good rainfall, but no single running stream (Routledge, 1998: 131-2). At the time Routledge and her company were on the island, some 250 islanders lived in the small village of Hanga Roa, gathered together here in order to secure the safety of the livestock, to which the rest of the island was devoted. The island was run by a manager, Mr. Edmunds, an Englishman. His house was surrounded by modern plantations (with eucalyptus trees), which were almost the only trees on the island. But Routledge found another one: a single well-grown tree “of the sort known in tropical countries as the “umbrella tree”. It was the only example of its kind on the island, “and was of an age that suggested it had been planted by the early missionaries” (Routledge, 1998: 125 and 136). As to animals and insects on the island, Routledge established the following: there were, as might be expected for Easter Island lies in the sub-tropics, many insects; cockroaches abound, of a red variety and not shiny black. Flies also were numerous. Mosquitoes, which have been imported, varied in their intentions; when they were at their worst it was necessary to wear head-gear and dine in gloves, according to Routledge. She also described that once there was a plague of little white moths, and occasionally, for a short while, visits of a small flying beetle. The ranch supported about 12,000 sheep, 2,000 head of cattle, and other livestock. There were about 500 ponies. Chickens of a lean species were also present. Further there were bananas and fig-trees. Vegetables were scarce. The lack of firewood was met by using oil; when, later, they had to economise on that commodity, it was supplemented by collecting dried manure. The islanders used brushwood or anything they could pick up; their manner of cooking, which is after Polynesian fashion by heating stones placed in the earth (‘curanto’), requires very little fuel. The water difficulty was ever present (Routledge, 1998: 137-8).

The political situation of that period did not give the islanders much freedom. They were not allowed to leave the village boundaries and were at the mercy of the William-Balfour Company. The Rapa nui had lost all their rights to their lands and many worked for Merlet’s gain. What happened to the rest of the island was beyond their control. It was during these years that significant changes were made to the island’s ecosystem. The sheep denuded the island and alien trees, mostly eucalyptus, were planted. But eucalyptus trees shed bark, creating an acidic dry litter beneath the trees, and the roots draw the moisture of the soil away from less hardy native plants. Also various birds of prey were introduced to kill of rats and sparrows, but harmed the island fauna more than was envisioned. Without natural enemies, pests and predators all flourished (EIF and PI, 2006).

After Routledge other expeditions on the island followed, of which of course Thor Heyerdahl’s is probably the most famous. Restorations of ceremonial platforms and the big stone statues became scientists’ missions and in the years quite a few Ahu and Moai have been restored. Today they serve as the top attractions of the island and the number of tourists that visit the island grows bigger each year. Also other objects of interest became the focus point for scientific research, such as the island’s fauna and flora in the past and at present. In 1964-5 a Canadian Medical Expedition took a sample from soil materials from the island. In an article in the ‘Rapa Nui Journal’ of September 1999 the outcome of years of study was discussed:

“A strange chemical in a soil sample from Rapa Nui, Rapamune, is nearing approval as one of the most promising new transplant drugs. It reduces the frequency of rejection in kidney transplants.”

After the Heyerdahl expedition the political ambience changed, which had implications for development and land rights. From 1966 onwards free elections have been held and around that same period a special “Easter Island Law (16442)” was enacted, giving a series of benefits to spur development. In 1973 Augusto Pinochet Ugarte took over control of Chile and under his dictatorship the island flourished. Extensive public works were carried out, subsidised government housing and

3 Nowadays they still have ‘curanto’ at special events, such as weddings and funerals, but also community based events, like festivals.
public buildings erected. Economic activities were liberalised and some Rapa nui were enabled to acquire land and capital. This created resistance with the traditional sectors. Along with other indigenous populations of Chile, the Rapa nui inhabitants put themselves in the hands of the Indigenous Peoples Act passed by Congress in 1993. This Act (D.L. 19,253), containing provisions specifically directed at the Rapa nui ethnia, was intended to regulate land allocation among the islanders and promote development initiatives for the island and its population (McCall, 1995 and Joint Mineduc-Unesco Project, 2001: 36).

If we look at the past hundred years of natural environment on the island, we can conclude that significant changes have taken place through the search for profits of foreign companies. After this episode the island was opened up to the rest of the world. Exploitation of natural resources and changing rights over lands characterize the late 19th century and the first half of the 20th century. Later on it seemed that Easter Island was given back to the Rapa nui. Feelings of injustice done to them in the past, have led to the distribution of territories under the population, but without taking into consideration the physical features of plots and resources of families to cultivate the land. Today, territories are owned by Rapa nui and the state. New policies are developed to regulate land allotment. In the next section I will take a closer look at the economic activities of the islanders nowadays and how they earn their living.

**How do Easter Islanders make their living now?**

From a transition of a “rich system” into a poorer one, using Boersema’s words, Easter Island today bears witness to an economically active population concerned with their own daily living. In 1914 the island only counted about 250 islanders, today approximately 4.000 people live on Rapa Nui. They have found other ways of living now. The main economic activities discussed here, are: agriculture, cattle breeding, fishery, public services, commerce and tourism.

Jose Miguel Ramirez, an archaeologist of the Catholic University of Valparaíso and who is actively involved in current conservation projects on the island, gave an impression of the island in 1988 and described the natural environment as it was then, but which still characterizes most of the situation as it is today. Ramirez, like Routledge, was struck by the erosion along the coast. Furthermore, the soils are permeable in a way that natural springs or sources of permanent water do not exist. The only natural reserves of rainwater are the lakes in the craters of Rano Kau, Rano Raraku (which contains sweet water, reed and *Moai*) and Rano Aroi. This situation made it necessary to use subterranean wells, in general brackish brine because they are located near the sea, and the construction of receptacles of stone to catch the rain (*Tahetas*) (Ramirez, 1988:11-14). Because of the absence of rivers on the island, irrigation on a large scale is impeded and therefore the Rapa nui are dependent on rain fall (also for the drinking places of cattle). They control this water by using insecticides and other chemical products which can harm the island’s flora (Hotus, 2005). Nevertheless, some Rapa nui have specialized themselves in agriculture. They cultivate fruits (pineapples, bananas, avocados, melons, papayas), vegetables (carrots, tomatoes, onions, lettuces, cabbages) and root crops (potatoes, sweet potatoes and taro). Some people have made a living from this activity and little by little they are enhancing their cultivation systems to grow products of better quality. But not the entire island is suitable for agriculture, as was concluded in a study by local authorities. The study shows that only 6.65% of the total land surface of the island is suitable for cultivation. The rest of the island can be used as pasture area with a high level of conservation, or as forest with a maximum level of

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6 In the April edition of Rapa Nui News 1996 an article is written about the resistance against the Act. Many islanders were angry, because the definition of a Rapa nui person includes everybody that practises the culture. [http://www.netaxs.com/~trance/news.html](http://www.netaxs.com/~trance/news.html)

7 Information from the national census of 2002 obtained through the municipality of Hanga Roa. In 2002 3.800 people were counted, of whom 2.269 are Rapa nui. Based on information from a key informant it can be assumed that in 2006 4.000 people live on the island.

8 Unfortunately I am not able to give percentages with the different occupational activities, because the National Statistical Institute does not provide numbers and figures of Easter Island specifically. Additionally, it is hard to estimate the numbers per category, because most people are engaged in several occupations at the same time. A fisherman can also be a musician.

9 Information about this study was sent to me by an official of the municipality of Hanga Roa, but specific information about the year in which it was conducted, what for and by whom was omitted.
conservation or permanent pasture with a limited number of animals. These last two types of land uses share a similar type of soil.

Keeping cattle is assigned to ‘Jorgos’, Rapa nui men who are being associated with ‘savages’. They live together or alone outside the borders of Hanga Roa. Some possess the resources to supply their horses and cows with food and water; others have to drive their cattle to drinking places in the ‘campo’, which were especially created for this purpose. They live day and night with their animals and have secluded themselves more or less from the village. Because most of the land is not fenced and administration of keeping cattle does not exist, the animals roam around freely across the island. This causes several problems, like the damage done by cows and horses to archaeological sites. Many petroglyphs are situated in areas where these animals graze and they are damaged severely, because the animals trample on them. Another problem is the danger of hitting an animal when driving on the coast road during the night. Because the road is not lighted, accidents occur regularly. Then there is the problem of a particular plant which intoxicates animals, called “mad cow disease” by the islanders, but which in fact concerns something else. According to the veterinarian on the island horses and cows eat the yellow bush lupine, *Lupinus arboreus*, which grows on the entire island, and start to show signs of sickness. They get fever, stagger on their legs and sometimes die. This problem can not be dealt with if the animals have access to all territories on the island. Besides horses and cows, some people keep sheep, goats and pigs, but on a very small scale. The majority of households on the island keep chickens, although most people buy their ready-made chicken in supermarkets out of indolence. This applies for that matter also to other things. Later I will get back on the issue of the dependence of food and materials from the continent that the islanders experience.

Although sea life is relatively varied and abundant, it is poor if you compare it to other parts in Oceania. The absence of a coral reef limits fishing as well as the variety and quantity of marine animals. Additionally, a decline is visible in the already limited sea fauna. Nowadays people remember the time they ate a special kind of lobster, *Palynurus Paschalis*, which abounded some decades ago. This animal has been overexploited and fishermen did not take into account the reproduction period. Today, this special dish belongs to the category of delicacies. Even so, the exploitation of the lobster continues. In a creek in the ‘campo’, named Hanga Nui, a special place is created to collect and “grow” lobsters. Fishermen, who catch lobsters in nets, bring them to the creek, where adult lobsters are taken out for sale and young ones are kept in special reservoirs until they are big enough to be sold as well.

Not only the lobster will be disappearing from the island’s menu, also other forms of sea life are vanishing. White coral and specific sea snails are being exploited excessively. Another possible cause is the industrial fishing outside the national boundaries, but a considerable part of the men on the island are engaged in fishing activities, either to sell fish or to catch fish as a day’s meal.10

Sources of income for continentals on the island are public services and commerce. Chileans who work in health care, education and civil services are part of a circulation programme and are replaced every three years by new men and women from the mainland. Commercial activities include the import of products from the continent, commercial services and the tourist industry. The standard of living on the island at this moment had not been possible if it was not for the economic incentives from mainland Chile. But this has led to a situation in which Easter Island depends in large part on import from the continent when it comes to food (fruits, vegetables, meat, drinks and alcohol), construction materials and goods (e.g. household goods and modes of transportation). Buying a refrigerator or bicycle is a time and money consuming project, because you have to buy it on the mainland and wait until the next cargo ship sails out to the island. There it depends on the weather if you will have your belongings in one day or one week, because mooring is not possible and goods are collected by smaller boats that unload at the dock. Food is mainly transported by plane. This situation has made daily life rather expensive, because almost everything is imported.

Since the beginning of commercial flights to the island in 1967 other external factors have influenced the island’s landscape. Tourism developed quickly and measures were taken to facilitate growth in this sector. Tourism has become the main source of income for the entire population of Easter Island. The year 2004 counted as many as 36,468 tourists, of whom 32,060 came by air and 4,388 by sea. It is estimated that in 2004 the average stay was 5.5 day and the average daily

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10 Information from Hotus (2005) and own observations (2004-5).
expenditure was approximately US$ 100,-.\textsuperscript{11} This is not hard to imagine when you look at what Rapa Nui has to offer: archaeological, cultural and natural beauty. Excursions are offered by foot and horse, but most tours are done by car and bus. The island circular highway was asphalted so the ‘tourist attractions’ are easily accessible now. Some archaeological sites are “protected” by stone walls however, so that visitors cannot drive into the sites directly, but have to walk to the site. Standard programmes have been developed by several tour agencies to present the tourist the best of the best. To visit the National Park and the island’s museum tourists have to pay for admission. Another part of Rapa nui’s culture is offered by artists, ranging from sculptors to musicians and dancers. A cultural highlight is the Tapati Rapa Nui festival, which was held for the first time 1975 and is still celebrated each year. The festival alone attracts many tourists to the island and gives them the opportunity to participate in cultural events.

The development of the tourist industry is an ongoing process. Much care is given to the unique cultural heritage, because this is the island’s number one source of income. But in the enthusiasm of building a tourist infrastructure on such a small island new problems arise: Can Easter Island cope with an ever-growing flow of tourists? Some protection is already given by the borders of the National Park. In the next sections I will discuss international initiatives, national policies and local actions concerning the management, conservation and development of Rapa nui’s treasures.

International and national concern for the cultural and natural heritage

In this part I will discuss protection and conservation efforts of Easter Island’s heritage. Firstly I will describe Easter Island as a World Heritage Site, why it is so very special and UNESCO’s mission. Secondly I will discuss projects of other actors, like Chilean institutions and international organisations.

Recognition as a World Heritage Site

After having ascertained over and over again that Easter Island bears witness to a unique cultural phenomenon of which archaeological evidence is still present, in 1995 the uniqueness of Rapa nui’s imaginative and original tradition of monumental sculpture was finally recognized, when it was inscribed on the World Heritage List. Below follows a description of World Heritage as formulated by UNESCO:

“Heritage is our legacy from the past, what we live with today, and what we pass on to the future generations. Our cultural and natural heritage are both irreplaceable sources of life and inspiration. What makes the concept of World Heritage exceptional is its universal application. World Heritage sites belong to all the peoples of the world, irrespective of the territory on which they are located.”

Such a site is the Rapa Nui National Park on Easter Island. It is described as follows:

“Rapa Nui National Park contains one of the most remarkable cultural phenomena in the world. An artistic and architectural tradition of great power and imagination was developed by a society that was completely isolated from external cultural influences of any kind for over a millennium. The substantial remains of this culture blend with their natural surroundings to create an unparalleled cultural landscape.”

“The archaeological evidence consists mainly of Moai (megalithic statues), Ahu (ceremonial platforms), Hare (stone houses) and ceremonial villages, petroglyphs, and wall paintings. They constitute an outstanding and unique cultural heritage.”\textsuperscript{12}

\textsuperscript{11} Information from Tarai Henua, “Tataku Boletín N°9”.
\textsuperscript{12} Information from UNESCO (2006). The Rapa nui term for houses has been added here.
Since 1995 this specific area on the island has been put under international control over protection and preservation of the cultural and natural heritage. UNESCO seeks to encourage the identification, protection and preservation of cultural and natural heritage around the world considered to be of outstanding value to humanity. This is embodied in an international treaty called the ‘Convention concerning the Protection of the World Cultural and Natural Heritage’<sup>13</sup>, adopted by the UNESCO in 1972. But what does this Convention implies specifically? And what does it mean for Easter Island? How does UNESCO find ways to protect the area of the National Park on the island? In 1999 UNESCO was funding a project, the Rapa Nui Educational Village Master Plan, to build a new school on the island. The project’s goal was to provide education for all, firmly rooted in justice, identity, equity and democracy to develop Easter Island on a human dimension. It seeks to be efficient and clearly oriented towards achieving a better future for all, bearing in mind the lessons of the past (Joint Mineduc-UNESCO Project, 2001: 9). The school was opened in 2005. UNESCO also works together with international organisations and national governments to accomplish its goals. Together with the Chilean government they set up a conservation project for archaeological heritage on Easter Island in 2003. A mixed company of Chilean, Japanese and American specialists worked together in selected areas which were chosen out of the twenty thousand sites that need to be maintained urgently (Valdebenito, 2003: 4). I will now start at the national level and look at actions undertaken by the Chilean state. Later on I will discuss a few international organisations that have made Easter Island their object of study.

**National and international concern**

Concerning the legal status, the Rapa Nui National Park is the property of the Chilean State and was created under the name of Easter Island National Park in 1935 by Supreme Decree No 103 of the Ministry of Lands and Colonization. Since then the boundaries of the park have changed as well as the name. Legislative protection is provided by the Chilean Forest Law of 1925 (revised 1931). This is reinforced by subsequent legislation, of which the most important are the Convention of Nature Protection and Wildlife Preservation in the Western Hemisphere (1967) and the Government Properties Administration Law (1978).

The responsible national agency is the Division of National Parks of the Chilean Forest Service (Corporación Nacional Forestal – CONAF). There is a management team on the island, headed by the park manager. In 1976 it was made responsible for the implementation of the management plan. In

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<sup>13</sup> THE GENERAL CONFERENCE of the United Nations Educational, Scientific and Cultural Organization meeting in Paris from 17 October to 21 November 1972, at its seventeenth session,
Noting that the cultural heritage and the natural heritage are increasingly threatened with destruction not only by the traditional causes of decay, but also by changing social and economic conditions which aggravate the situation with even more formidable phenomena of damage or destruction,
Considering that deterioration or disappearance of any item of the cultural or natural heritage constitutes a harmful impoverishment of the heritage of all the nations of the world,
Considering that protection of this heritage at the national level often remains incomplete because of the scale of the resources which it requires and of the insufficient economic, scientific, and technological resources of the country where the property to be protected is situated,
Recalling that the Constitution of the Organization provides that it will maintain, increase, and diffuse knowledge, by assuring the conservation and protection of the world's heritage, and recommending to the nations concerned the necessary international conventions,
Considering that the existing international conventions, recommendations and resolutions concerning cultural and natural property demonstrate the importance, for all the peoples of the world, of safeguarding this unique and irreplaceable property, to whatever people it may belong,
Considering that parts of the cultural or natural heritage are of outstanding interest and therefore need to be preserved as part of the world heritage of mankind as a whole,
Considering that, in view of the magnitude and gravity of the new dangers threatening them, it is incumbent on the international community as a whole to participate in the protection of the cultural and natural heritage of outstanding universal value, by the granting of collective assistance which, although not taking the place of action by the State concerned, will serve as an efficient complement thereto,
Considering that it is essential for this purpose to adopt new provisions in the form of a convention establishing an effective system of collective protection of the cultural and natural heritage of outstanding universal value, organized on a permanent basis and in accordance with modern scientific methods,
Having decided, at its sixteenth session, that this question should be made the subject of an international convention,
Adopts this sixteenth day of November 1972 this Convention.
February 1998 a new management plan was adopted. The Secretariat then received information about the possible construction of a new harbour within the World Heritage site, the extraction of stone and problems in the management of the Park. In response, the Chilean authorities informed the public that the harbour project was indeed seriously considered some years ago but that this project was not being pursued anymore. The extraction of stone is strictly controlled by the Council of National Monuments in accordance with what is foreseen in the Management Programme for the Natural Heritage and the Master Plan for the Rapa Nui National Park. Further it was stated that whilst there is no specific buffer zone around the designated area, development on the rest of the island is strictly controlled and so the entire island may be deemed to constitute an adequate buffer zone. A close collaboration was established between the Council for National Monuments and the CONAF and consultations with the local authorities took place. A comprehensive programme for the preservation of Rapa Nui was prepared by the National Conservation Centre, the University of Chile and the CONAF and submitted for considersation under the Japanese Funds-in-Trust. The programme would include items such as: the preservation of stone, cultural anthropology, the environment and equipment. CONAF also cooperates with Spain in the management of national parks in Chile. In February 2001 a Protocol of Cooperation was signed between CONAF and the Organismo Autónomo Parques Nacionales of Spain, related to the national parks and other protected areas. In collaboration an action plan was defined that would last until 2003, and which in global terms enclosed activities such as: education, equipment, designs and research. The most important task of the cooperation was the design and construction of a Centre of Environmental Information in the Rapa Nui National Park on Easter Island (CONAF, 2004).

Besides CONAF other governmental institutes are engaged in different aspects of development on the island. I will briefly discuss them. The provincial government and municipality are both actively involved in the administration and management of the island’s daily affairs. They are also governmental bodies used by higher authorities to implement policies. The Ministry of Housing and Urbanisation (Serviú), for example, subsidizes the rehabilitation of patrimonial areas and the construction of houses with basic materials from the island to make it a logical part of the landscape (La Nación, 2003, 3). The National Cooperation of Indigenous Development (CONADI) safeguards the rights of indigenous people in Chile and promotes, coordinates and carries out government action in favour of the integral development of indigenous persons and communities, especially in the economical, social and cultural arena and stimulates people’s participation in national life (CONADI, 2004). Another agent in economical development of the island is CORFO, the Chilean Economical Development Agency, which has developed a special programme for Easter Island, ‘Tarai Henua’. This programme is supported by various other actors, such as Camara de Turismo, a department of Camara Nacional de Comercio, Servicios y Turismo de Chile, initiated by a group of entrepreneurs to professionalize and diversify commerce. They are, among other things, engaged in designing an operational model that stimulates the Rapa nui entrepreneur to develop a sustainable and specialised tourism and carry out studies to define and identify the tourist market for Easter Island (Cámara de Turismo, 2006). They closely work together with SERNATUR, the Servicio Nacional de Turismo, a public organisation that cooperates with the Chilean government to develop tourism in Chile. Their aim is to orientate, consolidate and stimulate the development of tourism in Chile in a sustainable way, generating more opportunities to incorporate the community, stimulate competition and transparency of the tourist market through action, programs and projects that benefit national and foreign tourists, tourist services, local communities and the country entirely (SERNATUR, 2006).

National preoccupation with Rapa Nui is definitely visible and the list of institutions and agencies noted in this paper is not complete yet. The various actors in development and conservation projects closely work together in formulated programmes with local commissions and organisations. Chile is aware of the fact that this unique little spot in the ocean is valuable and they have to take care of it well. It seems that much attention is given to a sustainable form of tourism, but concern continues to exist now a 5* hotel is opened and plans have been made to build a casino. Not only has this construction impact on the natural environment, it also affects local owners of already existing accommodation complexes and may change the type of tourism from one that focuses on

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archaeological sites, nature and culture to one that focuses on leisure activities. The impression is given that environmental impact studies are carried out, and concern is expressed and potential solutions are formulated, but whether implementation of formulated programs and projects will actually take place and what their outcomes will be, is still unclear.

When Easter Island was added to the World Heritage List even more international attention was drawn to the wonders of Te Pito o Te Henua (“Navel of the World” in Rapa nui). All kinds of international organisations engaged themselves in Rapa nui’s archaeological sites and natural environment. Especially scholarly interest from universities and associations around the world was attracted. I will discuss a few of them, focusing on biodiversity conservation and protection of the cultural heritage.

Restoration projects are probably the most imaginative of international concern for Easter Island. Since Heyerdahl’s expedition several Ahu and Moai have been restored and this has turned the island into an attractive tourist destination. Besides projects from the United States and Europe, an important role in the conservation and protection of archaeological sites is also played by Japan. A team of scientists from the Nara National Research Institute for Cultural Properties has developed a hydrophobic substance that is applied to the Moai and makes them water resistant. This treatment can prolong the “lives” of the stone images significantly.15

When you visit Easter Island today, you will still find a rough volcanic landscape with steep cliffs, and much grassland, but efforts are done to reforest the island. Several Botanic Gardens in the world maintain the cultivation of the Sophora toromiro, the Toromio tree, which once covered the entire island, but which became extinct. The conservation of this threatened tree is being co-ordinated by the Toromiro Management Group, which consists of members from Botanic Gardens and research institutions in Chile, Sweden, UK, France, Germany and Australia, committed to the conservation of Sophora toromiro and to the recovery of this species and associated island habitats within the ecology and culture of Easter Island. The aim of the TMG is ultimately to establish a viable population of S. toromiro on Rapa Nui. Current activities being co-ordinated by the TMG include: genetic studies of the Toromiro collections in botanic and private gardens, archaeological studies and experimental plant re-introductions. But a single species conservation project will only succeed if integrated within the broader issues of protected area planning and habitat restoration. Therefore the TMG collaborates closely with CONAF and the management team of the Rapa Nui National Park (Maunder, 2006).

Another international group of scholars interested in Easter Island is the Easter Island Foundation and Pacific Institute, which was organized in 1989 by a group of concerned scientists and interested persons who together were inspired by Polynesia’s incomparable archaeological treasures. The Foundation promotes conservation and protection of the fragile cultural heritage of Easter Island and other Polynesian islands. One of the goals of this non-profit organization is to establish a library on Easter Island, named for and dedicated to the late anthropologist, William Mulloy. Mulloy’s private collection forms the core of this scientific research library. Their activities enclose, among other things, funding of archaeological research and publishing books and journals about Easter Island and Polynesia. Concerning tourism they have established an increase in the number of tourists (from 4,961 in 1990 to 36,468 in 2004) and problems arising from stops of cruise ships. The big cruise ships, which carry as many as 1000 passengers, stop at the island. Up to 800-900 people are taken around the island in buses to see the archaeological sites. This has a huge impact on the island’s fragile sites. The Foundation supports a form of tourism that is environmentally and culturally aware, because the harm that can be done by hordes of tourists is incalculable. In 2004 an international conference on Easter Island and the Pacific was held in Viña del Mar in Chile, sponsored by the University of Valparaíso, Centro del Estudios Rapa Nui and the Easter Island Foundation. Interesting papers were presented concerning related subjects as cultural resource management, conservation and Rapa nui archaeology. Francisco Torres-Hochstetter from the Sebastian Englert Museum on Easter Island and Brett Shepardson of the University of Hawaii concluded that the most effective way to protect Easter Island heritage is by getting Rapa nui people involved (EIF and PI, 2003). Later I will get back at this point and discuss local opinions and initiatives.

An international non-profit organization that aims to safeguard World Heritage and provide support for the conservation of the world’s natural and cultural heritage is Earthwatch. It is a partner institute

15 Information provided by the provincial government on Easter Island.
of UNESCO. They state that their volunteers have worked on Easter Island for the last 15 years to discover what factors brought about the society’s collapse in the 17th century. Earthwatch actively involves people of all backgrounds in field research teams, working alongside eminent scientists to provide critical information for the conservation of our shared heritage. This project is about how societies respond to radical environmental change by modifying their farming practices to achieve a sustainable economy. The key research objectives are:

1. Conduct archaeological field survey to record prehistoric archaeological remains;
2. Map the distribution of prehistoric agricultural fields;
3. Document the thermal and moisture regimes of prehistoric rock gardens;
4. Excavate and interpret ancient habitation sites;
5. Reconstruct the temporal patterns of island landscape use (AD 900-1800).

During the 2004 field season three data collection activities were accomplished. The survey has revealed the numerous types of past cultural remains on the landscape surface that require testing and behavioural interpretation. Over the last two field seasons the site evaluation phase was started that is conducted through excavation and analysis. This process will require numerous additional field seasons that target one or two site categories for excavation each year. New projects will start in September 2006 (Earthwatch Institute, 2004).

International initiatives discussed here form only a small part of the international concern for Easter Island’s heritage. The question is: Is there communication and cooperation between the different actors? And are the initiatives effective? What must be said as well is that without so much national and international concern conservation of this heritage could have been totally absent. I do believe that the international attention given to the island has made the Rapa nui people more aware of their culture and environment, since they have started to undertake action themselves as well.

Local awareness and initiatives

On a local level there are also people who have organized themselves in organisations in order to influence aspects of their island life. The highest traditional authority is probably the Council of Elders (Consejo de Ancianos), a community organization based on traditional Rapa Nui social structure. Since the 1970s, the president of the Council of Elders had been Alberto Hotus. In 1994 concerns were focused on a power struggle between two rival groups that claimed leadership of the Council of Elders. The main issue at stake was how the islanders could regain control of government lands and, more broadly, what interests should prevail in the island's development. Hotus and his supporters support a Chilean government plan, established under the Indigenous Peoples Law, to distribute surplus government lands to the native people. The plan also would give them a greater say in the administration of remaining government lands, including a 16,000-acre cattle ranch and a 16,000-acre national park. Hotus prefers to work with the government for gradual empowerment of the island community while reinforcing traditional culture. He said the rival group represented private business interests, including those of people who want to buy and sell land. That, he said, would result in further concentration of wealth in a few hands (Long, 1994). The other group united themselves in the Parlamento Rapa Nui and wish autonomy of Easter Island. They have strong feelings about the political course the island should take and they try to create a better future for the island. Visions about the projected futures continue to differ between the competing groups.

Local empowerment has come about now administration has been decentralized. This was made possible by CODEIPA, the Development Commission of Easter Island (Comisión de Desarrollo de Isla de Pascua). It was called into existence in 1999 and fuses different actors in developmental issues. The commission consists of five ethnic representatives, amongst who Alberto Hotus and the mayor of

16 For more information on the Field Report of the Project ‘Easter Island Cultures’, I refer you to: http://www.earthwatch.org/site/pp.asp?c=dsJSK6PFJInH&b=393563

Significance/Benefits of the research are given at the local, national and international level and the educational opportunities for local communities consists of the employment of a Rapa nui field assistant on each field project.
Hanga Roa, and five representatives of governmental institutions, amongst who the governor. In 2002 Easter Island was assigned a ‘Special Status’ by CODEIPA, which implies less bureaucracy and more decision making at the local level with social responsibility. To illustrate the matters in which they are engaged, I will mention a couple of points of interest: the construction of a new hospital and attracting more professional personnel, introducing an entrance fee to tourists for the development of the island, controlling the number of immigrants that together with a high birth rate put pressure on social services and the environment, regulation of traffic, improvement of the tourist industry to offer tourists a better quality product, actualize the ‘Easter Island Law’ (16,441) and narrow the ties with French Polynesia (in terms of the exemption of taxes and an agreement on the protection of flora and fauna amongst others) (La Nación, 2003: 4-5).

Looking at the natural environment, I was confronted with ongoing environmental problems during my stay on the island in 2004-2005. I discussed these problems with local people and established that there are Rapa nui who are very concerned with nature and with the environment around them and talk about possible solutions during meetings. I once attended such a meeting (March 2005), which was organized by the government and PRODEMU (Fundación Pro Derechos de la Mujer – Women’s Rights Foundation) to celebrate the International Women’s Day. Groups of women were formed to discuss several subjects which need improved management, such as natural environment, tourism, education, health and migration. In the discussions key problems were formulated, which include plastic bags, garbage along the coast and vehicles. Possible actions to deal with environmental problems for example were put forward by some women and welcomed by others. Instead of using plastic bags, bags of natural material need to be introduced. Garbage needs to be separated at home into biological and other waste. Many people have a manavai, an ancient cultivation system where a circular stone structure protects the trees and crops inside, near their house and some already use this place for compost. Retailers have to sell returnable materials (bottles on deposit amongst others) and regulation needs to be developed concerning the number of cars that are being imported on the island (quota per person and per company). A final action plan concerned working with children. In the conclusion it became clear that what the Rapa nui need to achieve with these measures, is an education campaign offered at school and by the media. It should generate the awareness that change begins at home. The results and conclusion of our discussion about the natural environment, together with those of the other subjects treated at the meeting, were presented to the mayor of the village. Also other actions are taken to make the islanders aware of their environment. During radio broadcasting presenters appeal to the villagers to collect their own garbage in the ‘campo’ and take it back to Hanga Roa or to leave it in the dustbins that have been placed on posts along the coast road. Sounds of concern do exist on the island itself and some people make tremendous efforts to improve the environmental situation, but others are still unaware of their participation in the ecological deterioration. Even the mayor does not seem to be very concerned, because, according to a few concerned islanders, he seldom gives feedback on action plans that are presented to him. Ecological restoration on the island is necessary, but if the support for protection, conservation and improvement of the natural environment is not widely supported by the population and local authorities, future life on the island is put at risk again and familiar doom scenarios might reappear.

Finally I will discuss conservation efforts of cultural heritage by the islanders themselves. The Rapa nui culture today is expressed in material culture and performing arts. Sculptors make the most beautiful art works and develop their styles and figures. Musicians and dancers perform “traditional” music and dances, but also incorporate external elements in their repertoires. Although some might say that these cultural art forms have been commoditized for the tourist industry, signs of true interest in maintaining the Rapa nui culture do exist. It is obvious that figures of Moai and other souvenirs are sold to tourists, but from my own observations I have established that the islanders themselves are very keen on wearing the same jewellery and tattoos on their bodies as those offered to tourists. Most houses on the island are decorated with objects and figures, which are also sold in the artisan market. And in every household you can find at least one CD of local dance and music groups like Kari Kari, Topatangi or Varua. The Rapa nui people are proud of their cultural heritage and this is also expressed in the different festivals that are organized throughout the year. I have already mentioned the Tapati Rapa Nui festival, but also other festivals emphasize their cultural roots, such as the Rapa nui language. I also mentioned before that the Tapati festival offers tourists the opportunity to participate. This may seem very commercial and in general a tourist dressed up as a ‘local’ is certainly not an
authentic or particularly pretty sight, but also here underlies a cultural tradition. Because it concerns a competition between Queen-candidates the people on the island are divided into groups that support the different candidates. In the final procession points are given to the supporters of each candidate and the rule applies ‘the more traditional the clothing, the more points you receive’. But what makes the participation of the tourists interesting is the fact that they are also counted as supporters of a candidate and ‘traditionally’ dressed tourists can influence the outcome of the competition.

These initiatives are supported by official agencies, but were not possible if the Rapa nui community did not support these activities. The islanders are proud of their cultural and natural heritage and are eager to show their pride to the rest of the world. But the fact remains that Easter Island does not represent the idyllic island paradise image. In the projects discussed, conservation and protection are key words. The impression exists that many actors in conservation and development planning including the Rapa nui themselves, are brilliant in formulating existing problems and in designing visionary solutions. But which of the initiatives are seriously carried out and really contribute to a sustainable future? In formulating the theoretical framework for a new study on sustainable development and sustainable strategies on Easter Island, the concept of ‘sustainable island living’, also used by Gillian Cambers who studied islander’s perspectives on sustainable living, may be very useful. It refers to a process that enables everybody to enjoy a decent living and a good quality of life in terms of satisfying their needs (economic, social, ecological and cultural) and it creates an enabling environment for the next generation to fulfil its aspirations. It attempts to bring the concept to a personal level – every individual and community member has a role to play – and in focusing on the next generation as opposed to more distant future generations. It makes the concept more conceivable and immediate as a goal that can be achieved in an individual’s lifetime (Cambers, 2006: 126-7). Ultimately, most people are primarily concerned with their own day-to-day living even if they are concerned with, in this case, island issues.

Conclusion

In conclusion I can say that also in the last century profound changes have taken place in the island’s natural environment, and were not always positive contributions. How remarkable as it may seem, exploitation of natural resources continued well into the 20th century. Several factors played a role in the continuation of resource abuse. But “living beyond ‘collapse’” suggests a life after a breakdown. The Moai culture did indeed collapse, but the Rapa nui did not cease to exist, and neither when external forces took over control of the island. The Rapa nui found other ways to continue their lives on an island which was ecologically deteriorated. The pace in which the Rapa nui people adjust themselves to new conditions is admirable and luckily awareness of the environment does exist at some degree now. On different levels management plans and conservation projects are implemented to protect the cultural and natural heritage. Besides the initiatives taken by UNESCO and partners, other institutions and actors, including the Rapa nui themselves, also play an important role in the protection and preservation of the island’s natural environment and its cultural manifestations. Although I have given a sketch on projects and activities in the last couple of decades to protect and preserve the World Heritage Site at Easter Island, there are still questions left to be answered. How is the situation like today, in the year 2006, when we look at UNESCO’s goals? What can we find in the Rapa Nui National Park that suggests that it is being protected and preserved? What are the outcomes of the projects that have taken place? Are the conservation policies and projects sustainable and are measures controlled? And most importantly, to what extent are the Rapa nui people themselves being involved in these international projects and activities? The year after the World Heritage recognition, local authorities on the island worried that the UNESCO decision could be a mixed blessing. The island’s governor at that time expressed his concerns in an interview with a CNN correspondent (Lovler, 1996):

17 They were nearly exterminated by the Peruvians in the second half of the 19th century, but also survived this episode.
‘We have our rights. We have to remember that the island is a place where human beings live and we have to develop too. We can’t be a museum for the world.’

Are they more confident now? It is not my intention to criticise serious efforts of conserving Rapa nui’s heritage, but I am trying to find answers to these questions. Based on my own experience I can say that some Rapa nui are frustrated by the corruption of local authorities and continue to conclude there are environmental problems, while others are still unaware of them.

What is clear though is that in order to find answers to the questions posed here, extensive fieldwork on the island would be necessary, because the information gathered here is not enough to decide whether or not conservation projects or management plans are sustainable and how the islanders themselves perceive their environment nowadays. In the preparation phase for a new study, these questions will be taken into account.

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World Heritage;


MONTESSORI SCHOOL OF MAUI

GUIDELINES OF SUSTAINABILITY

Provided to the
State of Hawaii. Department of Business, Economic Development, and Tourism,
Strategic Industries Division, Rebuild Hawaii Program
by:

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In association with:
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Master Gardener: Tom Talbot, B.A. History
I. BACKGROUND

Montessori of Maui Inc. (MOMI), a not-for-profit school, has been educating children on Maui since 1978. The school has been operating at its current location since 1992. It serves approximately 194 children from 18 months to 14 years old. The school is located on the island of Maui and at an elevation of roughly 1500 ft on the northern slope of Haleakala. Situated about five miles from the North Shore, the nine-acre campus is also near the town center of Makawao.

The school is committed to integrating the built and natural environments with the curriculum. Therefore, we believe that it is necessary for our campus expansion to incorporate the conservation and preservation of natural resources and to move into a position of balance within the community. The school’s expansion plan includes a multi-purpose facility, a middle school complex, additional classrooms, auxiliary buildings, and required parking. This expansion will enable the school to serve up to 270 students and to be available to the community as a meeting and event venue.

In the spring of 1996, a handful of people associated with MOMI met to discuss developing an outdoor learning environment on the school’s campus. After several meetings, we decided to pursue the concept of a Living Classroom. A grant provided the seed money for the project. The committee, which was composed of board members, administrative staff and faculty, formulated the mission and purpose of the proposed project. The Earth Education Program and the Community Garden were developed as a result of those initial meetings.

In July of 2003, Professor Stephen Meder, of the University of Hawaii’s School of Architecture, facilitated a Design Charette composed of MOMI staff and community volunteers. The purpose of the charette was to develop a set of Sustainable Design and Operational Guidelines to define the parameters of our sustainable campus expansion. The school received a grant from the Hawaii State Department of Business, Economy and Tourism to develop the guidelines and Rebuild America provided additional support.

The guidelines are meant to serve as a design template for MOMI, as well as for other schools that seek to integrate educational philosophy and sustainable design principles. We made the guidelines available during the preparation of MOMI’s Proposed Site Plan and they are meant to guide the comprehensive Campus Design and Construction Plan. To the extent possible, all components and features of the campus will be working elements within the school’s curriculum, providing the students with opportunities to learn about and experience the natural world and its systems. Ultimately, we believe that the students will respect and appreciate their environment in the same way that they respect and appreciate themselves and each other.

Our model is one of many and it has grown and changed with the community’s interests and needs. Although our primary intent was to create an outdoor classroom that reflected the Montessori principle of Cosmic Education, the curriculum has expanded and the concept has outgrown our original vision. The MOMI community has discovered that extending the classroom into the outdoors gives new depth and meaning to student learning by expanding and enriching it through interaction with the natural environment. It is changing the way we relate to our campus, how we envision our campus expansion, and how we view our community as a whole.
II. PURPOSE OF THE SUSTAINABLE DESIGN and OPERATIONAL GUIDELINES

Montessori School of Maui (MOMI) is embarking on a campus expansion that will be largely defined by sustainable building guidelines. These guidelines will support the school's mission and curriculum, as well as provide a guiding template for the architects and engineers in the development of the MOMI campus. The purpose of the guidelines goes beyond the integration of the Montessori educational philosophy and the creation of a beautiful, high quality, and functional environment. We also plan to create a model campus in terms of sustainable design, materials and practices. These guidelines include specific qualitative and quantitative sustainability principles, as well as actionable design methods.

Our intent is to maximize the use of existing topography and trees to create a village of low-maintenance, non-toxic buildings and special-use areas, interconnected by paths and covered walkways. Buildings and outdoor areas will be situated to maximize benefits of existing contours and trees. The entire campus will be seen as a sustainable living classroom that integrates all areas of the curriculum.

Water catchment, storage, filtration, and re-usage will constitute a conspicuous feature in the form of cisterns, ponds, streams and water features. Landscaping will be indigenous, edible, fragrant, and functional. Extensive application of photovoltaics and solar water heating should result in net positive energy consumption.

Non-toxic, low-maintenance materials will be used as a rule. Buildings will be designed to maximize natural lighting and ventilation. Indoor-outdoor spaces will maximize the students' relationships to the natural environment. In addition to providing exposure to indigenous plants, this will increase the students' awareness of Hawaiian culture and history as it relates to this particular place.

To the extent possible, all components and features of the campus will be functional elements of the school's curriculum, providing students with opportunities to learn about and experience first hand their environment and their impact upon it. Ultimately, we hope that children will learn to respect and appreciate their environment in the same way they have learned to respect and appreciate themselves and each other.
III. DESIGN and OPERATIONAL GUIDELINES

The purpose of the Design and Operational Guidelines is to supply a platform of sustainable principles as a foundation and direction for future development on the MOMI campus. We also intend the guidelines to provide an operational template for the daily activities on the campus and, most importantly, to establish a working model through which the purpose and performance of the built environment can be positively integrated with the Montessori curriculum and its educational environment.

There are natural overlaps among the various Design and Operational Guideline topics. A reference note is placed at the beginning of related topics. For example, the topic heading:

**Landscape and Exterior Design**

*REF. 2.1, 3.3*

indicates that topic 1.5 Landscape and Exterior Design, is also related in strategy and application to 2.1 Overall Building Quality and Performance and 3.3 Water Conserving Landscaping.

Each topic in the guidelines makes specific design and operational recommendations, as well as considers the intent and impacts of each of the recommendations through the lenses of the following three scales:

**MACRO**
This is the perspective that measures the impacts and influences of each strategy at a scale well beyond the site. This would include ramifications at an island, state, regional and/or global level.

**MESO**
Meso typically means intermediate or middle. In ecological terms, it connotes the inclusion of mountains. In Hawaii, we can consider it to mean “from the ridge to the reef,” or the *ahupua’a*. The meso perspective estimates the influences and impacts upstream and downstream of the site. For example, this scale includes the contiguity of ecosystems, and examines the influence of each strategy on neighboring communities.

**MICRO**
This is a more site-specific scale. It accounts for the ramifications of the various strategy applications within the boundaries of the site. This could include everything from site-specific rainfall, wind patterns and solar exposure, to the implementation of the school’s recycling program and its influence on a child.
1.0 Site / Ecosystems

1.5 Landscape and Exterior Design

REF. 1.3 Reduced Site Disturbance, 2.2 Site Selection, 3.1 Overall Water Reduction, 4.1A Baseline Energy Performance, 5.2 Construction and Demolition Waste Management

Sustainable Guideline Goals:

• Encourage and restore ecosystems

  ACTIONS:
  • Identify existing and desired ecosystems on, near and contiguous to site
  • Develop open space on site to promote the restoration of appropriate ecosystems
  • Landscape with regionally-appropriate species
  • Use landscaping to offset environmental impacts of campus built environment
  • Provide ecosystem restoration model on campus
  • Landscape with native or site-appropriate adaptive vegetation
  • Require integrated pest management plan (eliminate harmful agricultural chemicals on site and utilize physical barriers for termite and other pest control).14

• Promote campus open spaces

  ACTIONS:
  • Do not overbuild
  • Create integrated indoor/outdoor spaces
  • Provide educational purpose to exterior spaces and landscape

• Reduce Heat Islanding

  ACTIONS:
  • Use sod/roof gardens
  • Use Energy Star Roofing products
  • Provide at least 50% shading on non-pervious services, and shade HVAC equipment.15

• Design for efficient, low-energy maintenance

  ACTIONS:
  • Use site-appropriate, drought-tolerant and perennial plant species if possible
    – Minimize necessary maintenance by providing easy access for equipment.16
    – If irrigation is necessary, use a drip system or gray water recycling system.17
    – Collect campus green waste for soil enrichment on campus

14Hawaii Advanced Building Technologies Program.
15HPS
17Ibid.
### 1.5 Landscape and Exterior Design  
*Continued*

**SCALES AND CURRICULUM—Intent and Impacts**

<table>
<thead>
<tr>
<th>MACRO</th>
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<tbody>
<tr>
<td>- Restores island ecosystem</td>
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<td>- Reduces large-scale heat islanding</td>
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<tr>
<td>- Landscapes to offset/sequester CO₂</td>
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<tr>
<td>- Demonstrates best practice implementation</td>
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<tr>
<th>MESO</th>
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<tbody>
<tr>
<td>- Encourages continuity of biodiversity and ecosystems</td>
<td></td>
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<tr>
<td>- Connects environmental stewardship with local economic development</td>
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<tr>
<td>- Demonstrates best practice implementation</td>
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<tr>
<th>MICRO</th>
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<tbody>
<tr>
<td>- Thoroughly integrates interior/exterior spaces</td>
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<tr>
<td>- Creates an attractive, comfortable campus</td>
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<tr>
<td>- Provides possible edible/saleable products</td>
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<td>- Energy bill savings</td>
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<thead>
<tr>
<th>CURRICULUM</th>
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<tr>
<td>- Natural learning environment</td>
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<tr>
<td>- Introduce the built/natural/human environment</td>
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<tr>
<td>- Reinforce <em>ahupua’a</em> concept</td>
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<tr>
<td>- Introduce permaculture, xeriscape, natural &amp; endemic studies, micro ecosystems, sod roof gardens</td>
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<tr>
<td>- Landscape as a lesson: the science of outdoor design and pattern language</td>
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<tr>
<td>- Landscape as part of the curriculum by growing usable plants, i.e.; food for the farmers market and school lunches, plants for weaving and lei making, etc.</td>
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IV. DESIGN and OPERATIONAL GUIDELINES

7.0 Integrated Curriculum

7.1 Site/Ecosystems
7.2 Buildings
7.3 Resources: Water
7.4 Resources: Energy
7.5 Resources: Materials

Purpose

“To go out of the classroom in order to enter the outside world which includes everything is obviously to open an immense door to instruction.”
—Maria Montessori

The purpose of the Sustainability Design and Operational Guidelines is to provide a guiding template for architects and engineers as they work to manifest the principles of MOMI’s Earth Education Program in our campus expansion. Similarly, we’ve developed this Integrated Curriculum as an extension of our Earth Education Program and with the purpose of integrating lessons on sustainability for students aged three to fifteen years with real, on-campus sustainable development.

Inherent in the Montessori approach to education is the “prepared environment” as an essential tool to promote the auto-education of the student. Also inherent within the Montessori philosophy is the idea that children should develop a “global vision” and an understanding that all things are connected and interrelated. Because of these tenets, we believe that our sustainability guidelines and integrated curriculum should direct new campus construction in such a way that students and teachers can utilize the facilities and grounds as learning tools within an expanded prepared environment. The campus and the buildings must provide and maximize opportunities for students to fall in love with the natural world, learn about Earth’s natural cycles, and gain an understanding of humanity’s relationship with Earth’s systems and species.

Maria Montessori defined the goal of education as “the development of a complete human being, oriented to the environment, and adapted to his or her time, place, and culture.” Our hope is that this curriculum, integrated with our Sustainability Design and Operational Guidelines, is used by educators both within and outside our school community. We envision its core components to be creatively utilized by students and their mentors in any educational setting—including MOMI after our campus expansion is complete.

Indeed, we feel that sustainability is a salient topic today for people everywhere, and that it is a topic that will be vitally important for decades to come. The concept of sustainability has been around for a long time, and became more widely discussed in the 1980s. The word sustainable suddenly began to appear everywhere and its meaning seemed to be rather slippery and ever-changing. Gradually, people came to agree that for an action or product to be truly sustainable, it needed to be environmentally sound, socially responsible, and economically viable. In 1987, after thousands of interviews with people worldwide, the World Commission on the Environment and Development broadly defined sustainability as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” Our goal is that this curriculum may assist generations of young people to learn about, contemplate, assess, question, further define, and live sustainability—one of the most important topics of this era.
Rationale

“Once the emotions have been aroused—a sense of the beautiful, the excitement of the new and unknown, a feeling of sympathy, pity, admiration, or love—then we wish for knowledge about the object of our emotional response.”
—Rachel Carson

Our Philosophy

To present lessons on sustainability to children ages three to fifteen years is to help them to understand balance in the universe. For children to comprehend the value of humans living in a “sustainable” way, they must first grasp the exquisite delicacies, niches, nuances, cycles, strategies, systems, and secrets of the natural world of which they are a part. As they are spurred to use all of their senses, their minds, their imaginations, their bodies, and their innate curiosity to investigate their immediate environment, their questions will flow. These questions will demand more answers and lead to more—and even better—questions.

Such inquiry can lead to deep exploration, understanding, celebration, and enjoyment in nature. For younger children, empathy with other living organisms in the natural world comes naturally. For older children, it may take longer to revisit this sense of empathy, or sense of true connection, to plants and animals. But this feeling of connectedness, of humans being a part of the web of life—and not outside it—is essential.

It is vital that students understand that almost all living creatures require the same things to survive: shelter, food, oxygen, and water. In this way, a human is not that different from an earthworm, a eucalyptus seedling, a ladybug, or a gecko. When students begin to comprehend this kinship between themselves and other creatures, they are poised to fall in love with the natural world. Children will only fully embrace, and understand, sustainability when they are inspired to ask how it’s possible for humans to live in balance with nature. Younger children will have the curiosity to explore and observe nature for clues as to how other creatures meet their own needs, with minimal waste and with minimal damage to their environment. Older children will have the desire to take action and investigate what humans can do to live in a more sustainable fashion, and in greater harmony with nature.

Core Components

A great many individuals, and their thoughts, writings, and experiences, have influenced this curriculum. Of course, our philosophy about how best to introduce children to the concept of sustainability largely mirrors the Montessori philosophy of education. We also found inspiration and ideas from naturalists, storytellers, and educators such as Rachel Carson, Louise Chawla, David Caduto, John Muir, Joseph Cornell, Rona Levinthal, Amory Lovins, Gary Paul Nabhan, Stephen Trimble, Brian Swimme, and David Sobel (to name a few).

We feel that for young people to understand what sustainability truly is, this concept should gradually become part of their reality over the cycle of years. Moreover, we think that a “sustainability curriculum” should not only unfold slowly, but it should also recognize the stages through which each child’s relationship with the natural world progresses. Finally, we feel that the best sustainability curriculum—and, really, the best curriculum of any kind—is one that is experience-based and internally-driven [by the students], as opposed to externally-driven [by a teacher].

Because of our beliefs about how best to introduce sustainability to children, this curriculum comprises three core components: a different approach in each of the three developmental stages through which children progress as their relationship with the natural world changes, the use of stories, and emergent questions (student-based inquiry).
Bonding with the Earth: Honoring Developmental Stages

“What’s important is that children have an opportunity to bond with the natural world, to learn to love it and feel comfortable in it, before being asked to heal its wounds.”
—David Sobel

The Montessori philosophy of education closely parallels the writings and theories of David Sobel and of other educators who’ve observed that children aged three to fifteen experience distinct stages of development. In Sobel’s words, these “formative years of bonding with the earth… include three stages of development that should be of primary concern to parents and teachers: early childhood from ages four to seven, the elementary years from eight to eleven, and early adolescence from twelve to fifteen.” Sobel also notes that while these age frames should be considered flexibly he feels that “environmental education should have a different tenor and style during each of these stages.” When we ask children (especially those under twelve) to deal with environmental problems we are expecting them to think too abstractly of weighty, scary subjects before they have a chance to fall in love with, explore, find comfort in, and begin to understand the natural world of their backyard, neighborhood streets, and school campus. We at MOMI agree.

Empathy: Finding Animal Allies. Children aged three to seven spend most of their time playing within sight or earshot of home. They have a natural tendency to empathize with the natural world and activities should enhance this developmental tendency and foster a sense of wonder. Ideal lessons include songs, moving like animals, celebrating seasons, and informal meandering walks.

Exploration: Teaching the Landscape. Children aged eight to eleven rapidly expand their geographical range. When asked to draw maps of their “significant world,” elementary students tend to draw their home very small and the majority of the map becomes the “explorable landscape.” Activities for elementary students should focus on exploration. They want to create imaginary worlds, build forts, search for treasure, take care of animals, and garden.

Social Action: Saving the Neighborhood. As children enter adolescence, at ages twelve to fifteen, social gathering spots (like the mall, downtown stores, the city, park, etc.) become their favorite places to spend time. As they begin to discover the “self” and to think about their place in society, they lean toward wanting to make a difference and “wanting to save the world.” Sobel suggests that social action take precedence at this stage and recommends such activities as “managing school recycling programs, passing town ordinances, testifying at hearings [and] planning and going on school expeditions....”

The Sustainability Design and Operational Guidelines and the Integrated Curriculum take into consideration these developmental stages. The scales of the intents and impacts of each guideline, or sustainable development strategy, are organized into Micro, Meso, and Macro. They are similar to the three developmental stages in which a child’s world expands to include, at first, just the home, school, and neighborhood, and ultimately encompasses all of society-at-large and the globe. In our Sustainability Guidelines, we consider Micro to be a site-specific scale, or the ramifications of a particular strategy within the bounds of the campus. Meso is an intermediate scale, or the consequences of a particular strategy for the landscape, or region, surrounding the campus. In Hawaii, such a region is the ahupua’a, or watershed, that extends from the mountains to the sea. Finally, Macro is the most expansive scale, and represents the results of a certain strategy at a multi-regional, state, country, or even global level. The fact that the Micro, Meso, and Macro scales of the Sustainability Guidelines’ intents and impacts mirrors the student developmental tendencies toward Empathy, Exploration, and Social Action ensures that the integration between the curriculum and the Sustainability Guidelines is even tighter.
### 1.5 Landscape and Exterior Design

REF. 1.3 Reduced Site Disturbance, 2.2 Site Selection, 3.1 Overall Water Reduction, 4.1.A Baseline Energy Performance, 5.2 Construction and Demolition Waste Management

#### SCALES AND CURRICULUM – Emergent Questions and Lessons

<table>
<thead>
<tr>
<th>MACRO: Social Action</th>
<th>MESO: Exploration</th>
<th>MICRO: Empathy</th>
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<tbody>
<tr>
<td><strong>Middle School (ages 12-15)</strong></td>
<td><strong>Elementary (ages 7-11)</strong></td>
<td><strong>Primary (ages 3-6)</strong></td>
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<tr>
<td>Imagine you are already attending school on the new campus...will you be spending more time indoors or outdoors? Why? Why do you think we build school structures? Are they absolutely necessary for learning? For playing? Do you ever wonder if we are the only animals that work indoors more than outdoors?</td>
<td>I’m curious to know just how many animals we can think of that live on our school campus? Where do all of these animals like to spend their time and build their homes? I’ve noticed that we see a special bird on the school campus only in the winter. Why do you think this bird comes to our school campus only in the winter?</td>
<td>I’m curious to know just how many animals we can think of that live on our school campus? What kinds of places do geckos like? How about Jackson’s chameleons, toads, Japanese white-eye birds, skinks, nematode worms, earthworms, cockroaches, and monarch butterflies?</td>
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<td>I wonder if the plants and trees we already have on campus could be used for landscaping the new campus? Do we have to bring in plants and trees from elsewhere? Why?</td>
<td>I wonder if there are other animals that migrate to Hawaii? Why do you think it’s important that they travel so far to get here? What are your special places at school? Why?</td>
<td>What are your special places at school? Why?</td>
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<tr>
<td>What are your special places at school? Why?</td>
<td>If you could wish for anything, what is your dream for your school? What kinds of things would you want at your dream school?</td>
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<td><strong>Suggested Lessons</strong></td>
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<td>Find out what plants would live best in your microclimate without needing to be irrigated. Try to plant as many edible plants as possible. Choose plants which are also low-maintenance and drought-tolerant. Try and go a whole day at school eating only from the garden. Are there many plants which are edible that are not regularly grown for human consumption? Could you eat them in order to survive?</td>
<td>Keep a journal for nature ideas, dreams, and drawings. Scientific “expeditions” around campus (i.e. plants/animals). Meet with architects, share animal/plant lists. Create an “ABC book” of school animals and their habitats. Introduce biomimicry. Focus on migratory animals. Build bird nest/bird feeder/bird-bath. See if birds visit. Build “sun traps” to introduce heat islanding.</td>
<td>Make a special Nature Book. Embark on scientific “expeditions” around the campus and identify animal homes. Pretend you are a special animal and you must build a new home; where will you build and with what? Why? Create poems and drawings of special places at school [for students and animals]. Discuss migratory animals as “temporary residents.” Design “wee homes” in nature for action figures, or figures you make.</td>
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