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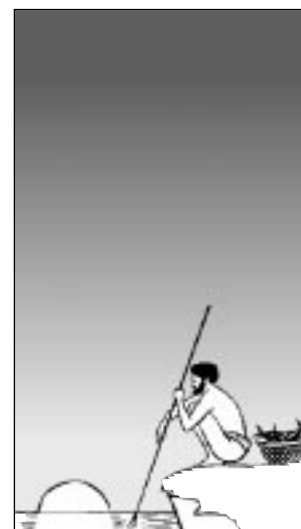
TRADITIONAL
Marine Resource Management and Knowledge

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INFORMATION BULLETIN

Note from the coordinator

This issue is devoted to methodology. In the first article Mark Calamia, a doctoral candidate in Anthopology at the University of Colorado, describes a general methodology for documenting indigenous knowledge of Pacific Island coral reef biogeography, and for developing a conceptual frame-work on how to adapt this information to a Geographic Information System (GIS) database.

In the second, Professor R.T Greene, a management specialist with many years of both corporate and university experience, and now at Kwansei Gakuin University, Japan, describes 'Community Quality Cabarets'. This is a tool that allows communities to recover parts of their own tradition while inventing new culture components for dealing with present challenges. Its use in a traditional fishing community culture on Majuro is reported, and how it can be applied to build bridges among stakeholders in conflict within communities described.

Finally, we draw your attention to two important new items of literature published in 1998. These are:

- 'Introduction to the special issue on a modern role for traditional coastal-marine resource management systems in the Pacific Islands.' **In:** Ocean & Coastal Management vol. 40, nos. 2–3, pp. 99–270,(1998). Edited by Kenneth Ruddle, and

- 'Customary Marine Tenure in Australia.' **In:** Oceania Monograph 48. Sydney: University of Sydney, 1998. Edited by Nicolas Peterson and Bruce Rigsby.

We are pleased to report that, beginning with the last issue, this Information Bulletin is now available on-line. As resources permit, all earlier issues will gradually be made available that

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way. To access to the SPC Coastal Fisheries Programme menu, go to:

http://www.spc.org.nc/coastfish/

Then scroll down to the bottom of that menu and open 'Newsletters'. Within that, select the title of this InfoBull: *Traditional Marine Resources Management and Knowledge.*

Kenneth Ruddle

A methodology for incorporating traditional ecological knowledge with geographic information systems for marine resource management in the Pacific[1]

by Mark A. Calamia[2]

Introduction

In this article I describe a general methodology for documenting indigenous knowledge of Pacific Island coral reef biogeography, and for developing a conceptual framework on how to adapt this information to a Geographic Information System (GIS) database. In many parts of the Pacific, *de jure* control of marine resources is now vested in government agencies although *de facto* control of resources continues to reside with many local groups that manage resources through traditional means. As we shall see, local input is critical for effective GIS resource management applications.

Throughout Micronesia, Melanesia and Polynesia local traditional fishing strategies have been lost as result of acculturation, development, commercial fishing, and population growth. In some areas, attempts have been made to use many strategies that remain strategies to complement more contemporary management approaches. Results, such as those of the Hawaiian Coral Reef Initiative assessment of coral reef health, suggest that some coral reef habitats in Hawaii show evidence of degradation. The coral reef habitats there, as well as in other parts of the Pacific, may be adversely affected by commercial and recreational fisheries, SCUBA diving, snorkelling, aquarium fish collec-

tion, and onshore development. Suspected causes of coral reef impacts include an increase in use by rising numbers of residents and tourists as well as such natural factors as hurricanes. Pacific peoples have an opportunity to contribute traditional ecological knowledge that may be of direct benefit to scientists and nonscientists alike in the protection of reefs from some of these impacts. Opportunities for such involvement include the development of a geographic information database system, thereby offering islanders an active role in the ongoing management of these fragile marine ecosystems.

Traditional ecological knowledge (TEK) and geographic information technology for resource management

The practical importance of TEK

Although the preservation of TEK is important for social and cultural reasons as well as for resource conservation ones, there are also practical reasons why TEK is very important, apart from the ethical imperative of preserving cultural diversity. The International Union for Conservation of Nature and Natural Resources (IUCN) Program on Traditional Knowledge for Conservation (IUCN, 1986) summarises five practical and tangible benefits of TEK:

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1. This article has been adapted from a longer work entitled 'Traditional Ecological Knowledge and Geographic Information Systems in the Use and Management of Hawaii's Coral Reefs and Fishponds' High Plains Applied Anthropologist 1996, 16(2): 144–164.
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- Traditional knowledge may be useful for new biological and ecological insights. New scientific knowledge is sometimes derived from perceptive studies of traditional environmental knowledge systems;

- Traditional knowledge for resource management is of great value. Much traditional knowledge is useful for contemporary natural resource management in areas such as tropical fisheries. In particular, rules and rote procedures developed by ancient resource managers and enforced by social and cultural means are often just as good as Western scientific prescriptions.

- Traditional knowledge is often used for protected areas and for conservation education. Protected areas may be designed to allow resident communities to continue their traditional lifestyles while enjoying the benefits of conservation. Where the local community is jointly involved in the protection of an area, the use of traditional knowledge for conservation education may be especially effective.

- With respect to development planning, traditional knowledge may benefit development agencies in providing more realistic evaluations of environment, natural resources, and production systems. Involving local people in the planning process improves the chances of successful development.

- Fifth, traditional knowledge is useful for environmental assessment. Local people who depend on local resources for their livelihood are in good positions to assess the true costs and benefits of development better than outside researchers. Their knowledge of the local area is a crucial aspect of any impact assessment.

Johannes (1993) presents a methodology for using ethnoscientific information for environmental impact assessment: traditional ecological knowledge and management system (TEKMS). In his approach, he recommends that four frames of reference be thoroughly considered during field work: taxonomic, spatial, temporal, and social. He notes that for the spatial frame of reference in environmental impact assessments, it is important to record the spatial distribution of living and non-living resources and amenities through detailed mapping.

The knowledge of local users is valuable in this context, especially in places where there is little recorded knowledge of local environments. Thus, the integration of information from sources such as satellite imagery, aerial photography or digital images, and TEKMS allows for an important opportunity to apply traditional ecological knowledge to environmental impact assessment (Johannes, 1993:34).

The social frame of reference also deserves some comment. This frame of reference refers to the manner in which local residents perceive, use, allocate, transfer, and manage their resources. TEK must be viewed within the social and political structure in which it is found. As such, environmental impact assessments should address the direct environmental impacts of a project as well as the impacts of altered human access to natural resources. The latter is contingent upon the nature or the absence of a traditional conservation ethic among indigenous people (Johannes, 1993:35).

By using TEK in management practices, Western societies may enhance their appreciation of the cultures that hold this knowledge. Furthermore, the documentation of such knowledge may be useful as a means for stimulating social change through policy development.

Indigenous peoples do have an enormous contribution to make in each of the five areas outlined above. However, it should be kept in mind that traditional knowledge is complementary to western science, not a replacement of it (Knudtson & Suzuki, 1992).

As discussed below, TEK can contribute to the conservation of coral reefs in Hawaii once the information has been converted to an automated information format that is spatially referenced. Because of different cognitive models and differences in access to economic resources, attempts at integrating TEK and scientific knowledge inevitably brings up the question of power-sharing in decision-making, a point that will be addressed at the end of this paper.

TEK, maps and GIS

Traditional peoples have also used TEK to represent the spatial dimension of important geographic features on the landscape and seascape. For thousands of years either hand-drawn or oral maps have been used for defining boundaries of homes as well as for depicting the location of important resource zones and sacred sites.

Bruno Adler, an early twentieth-century Russian cartographer, compiled or acquired 55 maps drawn on skin, wood, and paper by native peoples prior to contact with European explorers (de Hutorowicz, 1911). Gladwin (1970) and Lewis (1972) note that Micronesians created stick charts that showed complex representations of ocean

tides and currents. Australian aborigines have developed songlines to sing their land into existence. These songlines also draw mental maps of historical events, significant places, and claims to territory (Chatwin, 1987).

More recently, spatial information has been used for understanding interrelationships between traditional human societies and ecological processes. In Manitoba, Canada, elders teach skills and maintain continuity and links to community resource areas by transferring highly detailed 'oral maps' and inventories of resource values and land use to their younger members. These individual and family maps also complement one another in such a way that they provide integrated knowledge of the ecosystems within the village's traditional resource area (Wavey, 1993:13).

In a study of mapping customary land in East Kalimantan, Indonesia, Sirait et al. (1994), found that the combined use of oral histories, sketch maps, and Geographic Information Systems (GIS) and Global Positioning Systems (GPS), is a useful methodology for mapping customary land tenure and comparing villagers' perceptions of land ownership and land use to those of the state.

A GIS is an organised collection of computer hardware, software, and geographic data designed to efficiently capture, store, update, retrieve, organise, manipulate, analyse, and display spatial information (Burrough, 1986).

As a computer tool, GIS allows for the integration of many 'layers' or overlays of spatial information, the development of dynamic models, the analysis of trends over time, the simulation of scenarios, and the development of predictive models. An important capability of GIS is to link, relate, and analyse spatial and attribute data. Because a GIS handles natural resource data as automated spatial features, it is possible to develop resource inventories which can be rapidly accessed and updated. The GIS can also be used to perform spatial queries on automated resource data such as determining where natural or cultural resources are located with respect to other resources, impacts, or hazards.

High tech mapping tools, resource management and ethnography

Some recent examples of high tech mapping applications for traditional and applied research show how cultural anthropologists have used GIS for regional data management and analysis (Stonich, 1996; McGwire et al., 1996). Using concepts of ecological anthropology, these studies addressed the problem of effectively integrating data from disparate sources, such as informant interviews, remotely sensed images, and participant observation. This was crucial for those researchers who were attempting to find ways to integrate the results of traditional anthropological investigation which is usually personal and small-scale with information obtained from regional-scale phenomena. Another concern was to develop an approach to effectively operationalise the ecosystem concept rather than simply use it as a general paradigm (Winterhalder & Evans, 1991).

In the field of development anthropology, there is the need to manage regional-scale data within anthropological inquiry (Aldenderfer, 1996). The spatial scale of the cultural entity affected by rapid change is often much larger than that dealt with in more traditional anthropological contexts.

Development anthropologists, on the other hand, must address changes taking place across regions and larger geographic spaces. Thus, more traditional forms of investigation, such as participant observation, must be supplemented by other types of survey instruments such as questionnaires.

GIS may serve as another approach to augment traditional anthropological work by automating spatial data that can be related directly to problems of anthropological inquiry. It also provides a common basis for sharing data across scientific disciplines. For example, in her study of a Honduran society, Stonich (1996) exchanged data with agronomists and other natural scientists who had different perspectives on data collection and field research. GIS, in this case, served to develop a broader basis for cooperation among scientists from different disciplines.

In an interesting mapping study of coastal Nicaragua that applies traditional knowledge of a marine environment with GIS and other high tech mapping tools, Nietschmann (1995) showed how the Miskito Indian 'captains'—the traditional sea knowledge specialists—are assisting invited marine scientists, Miskito environmentalists and lobster divers to map Miskito reefs and inshore waters. Since its initiation in 1994, the Miskito Reef Mapping Project has been carried out by 13 communities in order to:

• Document that the vast system of waters and reefs belongs to them,

• Justify community defence of their sea territory against industrial fishing fleets, drug traffickers and international lobster 'pirates,' and

• Develop baseline biogeographic data for future comparison of coral reef change and health.

Cartographic and spatial modelling applications using GIS technology

The development of GIS 'layers' or overlays of coral reefs and man-made features, such as fishponds, that represent aspects of Pacific Islander TEK can eventually be used with other data digital overlays for modelling management alternatives to produce acceptable management scenarios. The dynamic 'what if' modelling process requires the manipulation of spatial information and input from the decision maker.

Using the cartographic modelling capabilities of a GIS, the 'what if' modelling of management alternatives can be operationalised (Berry, 1995). The potential to digitally combine overlays, determine feature proximity, generate buffers and reclassify maps allows Pacific Islanders to analyse the interrelationships between spatial features.

For example, cartographic modelling capabilities of a GIS can be used to assist a local group to identify the most optimal location for an onshore construction project based upon a specific distance from groundwater, soil type, avoidance of coral reefs and coastal runoff, and presence or absence of threatened or endangered marine species. In this example, GIS serves as an important tool in the development of management scenarios because of its potential to integrate a variety of spatial data.

Another possible application of GIS technology to resource management includes 'data mining.' In this application, the GIS is used to discover relationships among mapped variables (Berry, 1995).

For example, a map of a dead and dying fringing reef can be statistically compared to maps of independent variables such as water quality, slope, depth, substrate type, and effective sunlight penetration. If a strong spatial coincidence is identified for a certain combination of driving variables, this information can then be used for management action.

In a predictive modelling application, most of the modelling is nonspatial. Data are collected by sampling large areas, then reducing the set of measurements to a single arithmetic value. The averages of several variables are then used to solve a mathematical model such as a regression equation (Berry, 1995).

For example, a prediction equation for the amount of coral reef breakage during heavy diving activity may be defined in terms of number of visits to a site, the depth of the reef, the relative tensile strength of the corals, reef volume, percent defect, age of reef, and steepness of slope.

The nonspatial approach ignores the inherent spatial information collected and substitutes the average of each variable into the equation to solve for a single estimate of breakage for an entire area. A GIS approach, on the other hand, spatially interpolates the field data into mapped variables, then solves the equation for all locations in space. The result is a map of predicted reef breakage with 'loci' of unusual breakage levels clearly identified. A variant of this modelling is dynamic modelling which allows the user to interact with a spatial model. Model behaviour can be investigated by systematically altering the model's parameters and documenting the results. In a sense, this type of analysis allows for the identification of the relative importance of each mapped variable within its unique geographic context (Berry, 1995).

Cognitive maps

Ancient cognitive or oral maps undoubtedly reflected Pacific Islanders' worldview of how the land and seascapes were organised and utilised. Lexical categories for identifying water ecozones reflect the local inhabitants' intimate connection with nature. Their kinship to their natural environment was often based on a strong spiritual connection with their ancestors and the land where their ancestors were buried as well as on subsistence needs. The oral maps presented by contemporary local peoples may be seen, in other words, as an indigenous ethnographic model of their cultural code. The maps may reflect social behaviour and aspects of marine resource use and conservation.

Oral maps serve as a framework from which to operationalise local lexical items that may serve as part of the cultural code for aspects of biogeographic categories. Because the very nature of many societies' lexical items is spatial in nature, it allows for the mapping of terms (through a Western technology) to form a graphic representation of oral (cultural) maps of various marine ecozones (including reef locations) and associated man-made features.

Finally, a few words should be said about past TEK in relation to contemporary environmental management contexts. Prior to large-scale development, TEK was sufficient for supporting the indigenous decision-making process. Today, however, many Pacific Islanders recognise that resource management and planning for their future must address the fact that their natural environment has been substantially modified by agricultural and onshore construction projects, overexploitation of reef areas, increased siltation in bays and estuaries, and the other impacts of growing resident and tourist populations.

Using traditional knowledge for resource management planning and the development of spatial models

When used by Pacific Islanders, it may seem that the automated process of database development could replace TEK in the local decision-making process. However, unless resource-management decisions are developed through a method of environmental assessment and modelling that includes traditional cultural values, such as tenure rights, GIS technology cannot replace TEK.

An opportunity for incorporating TEK into the resource planning process for coral reef management is through 'sensitive area analysis.' This analysis is a step in management planning that allows for the identification of areas or marine eco-zones and cultural sites, such as fishponds, of particular concern to local peoples.

Reef sites and associated features that are environmentally sensitive, as well as reef areas and lagoons that are significant in a traditional cultural context can be designated as sensitive areas. These must be considered when local inhabitants determine suitability or capability of a land or water management unit for development. Sensitive areas may include the following: disputed areas, traditional religious sites, shrines, restricted areas off-limits to non-Islanders, marine eco-zones containing traditionally used marine resources (fishing areas or fishing holes), and endangered species habitat.

The ancient fishing sites of Hawaiians serve as an example. According to Hawaiian religion, *ko'a* are sacred spots decreed by the gods where certain fish will be found. It is believed that over time the fish return to these sacred spots, which are often blessed by natural food sources or currents. Hawaiians take care of these spots through offerings of sweet potatoes and taro, thereby encouraging the fish to return and training them so they can be harvested when the time is right. Most of these *ko'a* have been digitised as cultural features.

Another important opportunity for including TEK during resource planning and management is through GIS database development. Owing to the spatial nature of the traditional cultural and ecological knowledge of water eco-zones, TEK can benefit GIS technology in the development of a local Islander decision support system.

However, to effectively utilise the GIS for incorporating TEK into the community decision-making process, the GIS must include direct input from the local resource users. For example, development of a GIS database using Hawaiian terms

requires mapping *ahupua'a* (traditional tracts of land) and marine eco-zones from the local perspective. *Ahupua'a* have been mapped from historical landmarks using archaeological records and oral records from Hawaiian history.

The purpose of mapping and ultimately developing GIS databases from the Islander perspective is that spatial cognition often differs from one culture to another, which is exemplified in the different linguistic categories of the water eco-zone. Historically, Euro-American and many Pacific peoples represented space differently. This difference may be observed in the geometry and information content of their maps.

The information content (geographic feature attributes) in early maps used by Euro-Americans is of two basic types: (1) a general mixture of diverse geographic features or (2) a thematic representation of a single phenomenon. In the Euro-American cognitive model, the perception of space tends to standardise and categorise features while placing boundaries around the features. In terms of geometry, the map models are two dimensional and use projections that 'fit' the mapped features to the curvature of the earth (Marozas, 1995:6). Marine features mapped by contemporary Hawaiians may not be amenable to standardisation since perceptions of the *ahupua'a* marine eco-zone boundaries may vary according to tidal stages, currents, seasonality, and other natural phenomena.

In historic times, Pacific Islanders created maps. And, as mentioned above, the oral culture utilised and was dependent upon spatial references. Ancient Pacific Islander spatial knowledge was communicated through an oral process, and maps may have been used in conjunction with oral information. Tangible evidence of these ancient maps is difficult to find since most of them were probably relayed through chants based on known landmarks. It is also possible that directions were drawn on tapa or, in the Hawaiian case, presented in steps as part of the traditional *hula*. In expressive culture, such as the hula, movements are carried out which serve to embody experiences and events (Wood, 1992:14).

Marozas describes historic maps made by Native Americans: Historic maps produced by Indian people modelled the complexity of space in a way that was relevant and functional by first the purpose and second the cultural importance of geographic features. Rather than standardising geographic features, the map creator selected geographic features that helped communicate the purpose of the map. The geometry of the maps distorted distance and angles (scale and direction)

but preserved topology (connectivity) between features. For example, the size of a lake on an Ojibway birchbark map was not determined by the actual size of the lake; rather, the size of the lake depicted on the map was based upon the importance of the lake for the purpose of the map (Marozas, 1995:6).

Although the view presented here is speculative, it is possible that prehistoric Islanders also emphasized the most important geographic features. Cultural importance may have been placed on such geographic features as the *ahupua'a*, including the marine eco-zones and subzones. Likewise, it is possible that in historic times, emphasis was also placed on geographic feature names for man-made features (e.g., fishponds) which also suggests the cultural importance of these features.

An important point to keep in mind is that in emphasising the development of automated map 'layers' from the Islander perspective, the Euro-American uniform model of spatial reality contains a cultural bias or a perspective of spatial reality that is different and possibly inappropriate for the local decision-making process.

Modern mapping is based on a Western perspective, and ancient Islanders may never have used drawn cartographic products, relying instead on oral and expressive maps, such as the hula. In terms of traditional Pacific peoples' values, especially respect for other peoples' knowledge, the Euro-American spatial model may be somewhat foreign to indigenous peoples attempting to implement traditional values in a contemporary resource decision-making context. The cultural bias that exists in Euro-American models of spatial reality needs to be considered when attempting to utilise spatial information, which may be needed to incorporate TEK in the local decision-making process. Hence, in order to properly include TEK in community-based resource management plans and decision-making processes, contemporary Islanders will have to play an integral part in the development of geographic databases that reflect their own perspectives and values of space, usage, and land and marine tenure.

A method for mapping TEK of coral reefs

One of the most effective methods for mapping coral reef, fishpond and the other marine biogeographic features from an Islander perspective is mapping traditional marine use. Traditional marine-use activities are usually subsistence-related and include fishing and marine-related resource gathering activities. For example, in Hawaii many people, and especially women, are involved in fishing in nearshore waters.

'Every day saw many people, women in the majority, out on the reefs for hours, searching, collecting all that was edible and desirable. Calabashes tied to their persons floated along and held the catch' (Titcomb, 1972:4).

Another effective method for this mapping involves input from community experts and resource users. For example, local fishermen and other experts in marine resources can draft traditional sea use onto manuscript maps. A good starting point would be to apply local knowledge of marine eco-zones along with terrestrial topographic features.

Because marine eco-zone names may vary considerably, emphasis should be first on obtaining ethnographically derived information from local fishermen and marine experts for the boundaries of reefs and local fishponds. And because marine eco-zones may be region-specific, it would be inappropriate to generalise these eco-zones to all islands, or even to one island in an archipelago.

Local knowledge is critical for developing GIS databases that will not only reflect local TEK but, most importantly, will be meaningful and useful to Pacific peoples concerned with the impact of natural and anthropogenic forces on their use of marine resources, especially for subsistence-related activities. Informants should be screened prior to both structured and open-ended interviews to insure that they possess traditional knowledge of their culture's biogeography and marine resources. A list of marine eco-zone terms could serve both as a means for initiating discussion of local names and boundaries and as a screening aid.

Individuals residing or working on islands might be good sources of local information. To illustrate, residents could be asked about names of numerous ocean gathering sites showing scattered habitat areas. Traditional place names and locational information could be sought for fringing and barrier reefs. Finally, the coincidence of contemporary subsistence sites with important prehistoric archaeological and modern cultural sites could be investigated by asking local informants about their knowledge of these sites and the meaning and value they ascribe to them.

Interviews of residents could also be undertaken using the base maps as a starting point for specific areas. Local experts may be asked to give their own perspective on substrate distributions (e.g. sand, mud, reef and rubble) and habitat distributions (e.g. marine eco-zones, coral reef types, mangroves, or anchialine ponds). These people might point out discrepancies between the digital base map features or attributes and those that are local-

ly known. In essence, this information would reflect local cultural values and meaning pertaining to the biogeographic features shown on the maps, as well as serving as an accuracy check.

Similarly, GIS maps of coral reefs could be used to elicit information from local informants on the boundaries of the reefs as well as the reef types themselves. The reef types could then be compared with the coral reef typology. For example, many typologies consist of definitions for reef forms found throughout many Pacific Islands: fringing reef, barrier reef, patch and pinnacle reefs, lagoon floor, and coral community. A comparison of local names with the scientific names could reveal differences in geographic perceptions that may elucidate cultural variation in the boundaries of these marine features, as well as the values and meanings placed on them.

In many indigenous societies boundaries are dynamic and not static. It is likely that many marine eco-zone boundaries have shifted, depending on criteria that may have more to do with the purpose and cultural importance of the geographic features than with the need for geometric accuracy. In other words, rather than using standard symbols for geographic features, such as reefs and fishponds, these may have been selected on the basis of communicating the purpose of the map layer. These are some of the problems involving GIS mapping of ecological systems from the local perspective.

Once an appropriate GIS database is developed using a local Islander cognitive model, the database can be used to incorporate elements of TEK into the decision-making process for the planning and management of marine resource use.

A hypothetical application

An example of how local participation in resource management decision-making may be enhanced through the integration of TEK with GIS technology follows. A group of Pacific Islanders may set a priority on exploitation of particular subsistence fish species known to congregate at a local fringing reef. However, local assessments by expert fishermen reveal that fish production seems to have decreased over successive years. To understand this situation (and the basis for diverging viewpoints) it is necessary to first quantify the loss and to identify the causes of the decline. For this participatory approach to be successful, there must also be an explicit requirement for independent monitoring of resources.

The measurement of temporal change in particular species of reef fish populations requires mapping and monitoring of specific reef locations over a period of time. First, the fringing coral reef must be delineated by field surveys, Global Positioning System (GPS), remote sensed digital imagery, and underwater photos, to accurately demarcate the boundaries and depth ranges of the reef. The boundaries of the reef delineated by digital imagery could be transferred onto a base map, and polygons could be coded by image date along with other attributes and finally automated into the GIS. (See Friel & Haddad 1992 for a discussion of this methodology.)

Local fishermen's TEK of reef characteristics relating to productivity of particular fish species can be added to the feature attribute tables of the reef polygons. The attribute items can be identified by interviewing those local fishers knowledgeable about customary conservation practices and who can determine when and where reef areas should be 'rested.' These individuals possess knowledge about coral reefs and related changes in fish productivity that can be synthesised into descriptive attributes for portions of the fringing reef.

The resulting GIS layer would be an inventory of the fringing reef through time. The GIS could then be used to select and display monitored reef sites by specific dates. Comparative viewing of the displays with underwater photographs, identified by date, would indicate whether portions of the reef were changing in size and, indirectly, if particular species of fish also were declining.

The areas of the fringing reef could also be quantified by date to support the argument that the reef was diminishing. In addition, the fringing reef layer could be overlaid with sediment flow and water quality features, as well as known contaminant source points, to detect causes for variable reef productivity. The cartographic modelling capabilities of the GIS could allow users to identify variables contributing to injury of fragile reefs and to the decline of dependent fish species.

The development of traditional resource use GIS databases, such as fringing coral reefs, for inclusion in the management of marine resources facilitates reef ecosystem conservation and management. The inclusion of traditional marine use activities in the planning and management process is most valuable when modelled with other geographic data to aid in decision making on potential impacts to the resource or customary practices.

Conclusions and recommendations

As already stated, GIS affords Pacific peoples an opportunity to map their marine resources or activities from their own perspective. When local people engage in mapping traditional marine use,

they are, in effect, documenting how a portion of the ecosystem has been used within the community's traditional or customary resource area (Wavey, 1993). The resulting maps may reflect a significant amount of information about the local group's technology, economy and resource values.

As Pacific Islanders develop their own GIS community base maps they can begin to change the names of bio-geographic features on copies of existing digital maps to local names. These digital maps can also be annotated or altered to show landmarks and sacred sites. These annotations ultimately will reflect the values and perspectives of the local culture.

In using GIS, however, some of the rules of database development may need to be modified. For example, in GIS database development it is important to identify appropriate existing spatial data. This rule may not always be applicable to local groups that wish to incorporate TEK of coral reefs into marine resource management.

These local communities will have to develop maps from their own spatial reference points, since appropriate spatial data may not be available because of differences in cognitive models (spatial paradigms). Such layers as elevation, watershed, stream, vegetation, reef, land and sea tenure may serve as a good starting point for developing maps representative of local values and concerns. The resulting maps can then be used to teach children about local geography, GIS technology, marine resource management, and most importantly, the indigenous language. The involvement of knowledgeable community members in the mapping process ensures that marine use is mapped from a local perspective.

GIS databases that are designed to include traditional marine use in the community decision-making process are not in themselves a substitute for the power of TEK. More importantly, these traditional marine-use databases offer a framework into which TEK can be incorporated and then applied to solve specific resource management problems.

As seen in the above examples, GIS attributes for each geographic feature represented by a point, line, or polygon are found in a relational database that utilises a feature identification number to link the attributes to the cartographic feature. For example, every polygon in a GIS layer representing fishponds also has associated attributes in a relational database, which identify the type, owner, size, condition, approximate size, and cultural affiliation. In a similar manner, aspects of TEK can be associated with biogeographic features

that are mapped from the Islander cognitive model. The ability to associate TEK with geographic features is not unlike the way in which oral maps linked vast amounts of cultural information to culturally important spatial reference points, including events and sacred sites, important landmarks, and resource harvesting areas (Goes in Center 1994, as cited in Marozas 1995).

Through the use of lookup tables and related databases, feature attribute tables for automated geographic features can hold large amounts of traditional knowledge. The automation process requires identifying and adding attributes and then filling the attributes with codes or actual data. Database design is a requirement prior to data entry to ensure that the attribute data are consistent and adequately integrated to meet the requirements of different applications.

Along with accuracy, there is the issue of using TEK in a GIS environment that ensures adequate security. In the Pacific, security is crucial because the information contained in these databases is very valuable intellectual property of the local people. Intellectual property is specialised secular knowledge that is potentially exploitable for profit by outsiders. Sacred knowledge, on the other hand, is knowledge that is of religious origin and not often revealed to outsiders. This knowledge, together with intellectual property, could be contained in databases to which only designated individuals have access, thereby offering some assurance against outside manipulation of the database.

Since the most important purpose of including TEK in the GIS is to encourage local participation and to support the local decision-making process, the data should be made available only to researchers with whom local groups wish to share it. The rationale for this caveat is that some researchers may wish to use the ecological databases that contain TEK to promulgate more laws and regulations on the use of resources by indigenous peoples (Wavey 1993).

Pacific peoples could contribute to and develop their own local databases through the development of onsite GIS workstations. Such local GIS sites could be set up in individual communities utilising databases and copies of base maps and thematic layers from the State government GIS for local management needs. These databases could then be used to create locally significant cartographic models and maps of geographic features with associated attributes containing TEK.

Conceivably, these new layers would remain the sole property of the community user group. Access would be licensed to designated groups or

individuals involved in using local knowledge to enhance resource management.

In such a scenario, not only would local Islanders take an active role in the management of their own resources, but they would also be empowering themselves by making local decisions that could augment government resource management efforts. In these times of dwindling funds for implementing resource management programs, this could serve as an alternative strategy for agencies in carrying out their mandates for environmental protection and marine resource development.

On another practical level, there is good reason to include local TEK in the planning and management of marine resources: by having a better understanding of what the local ecosystems have provided Islanders in the past, it may be possible to assess the magnitude of problems in the regional marine ecosystem created by modern anthropogenic practices.

This understanding could be acquired through archaeological investigations to reconstruct prehistoric environments and identify the resources exploited by early indigenous peoples in areas currently subject to environmental impacts.

A number of recommendations follow for integrating TEK of biogeography and cultural values with GIS technology and existing databases, to enhance participation in the planning and decision-making process for local marine resource management.

1. Government agencies could organise a team of trained local ethnographers to conduct interviews with focal groups of Islanders to elicit information on locally available marine resources, such as coral reefs and associated fish populations. With permission of the informants and their relatives this information could then be used to augment feature attribute tables in the State government GIS or create new layers, as appropriate. In addition, community awareness and conflict resolution could be mobilised through the use of Participatory Rural Appraisal (PRA). The products of PRA might include a set of maps that could reveal as much about the people's minds and attitudes as about their marine resources.

2. GIS maps of coral reef layers from prior studies could be copied and annotated with information from local fishers on the boundaries of the reefs, as well as the reef types themselves. The reef types could then be compared with the reef typology used in other studies. By compar-

ing local terms with the scientific names, differences in geographic perceptions may clarify cultural variation in values and meanings placed on marine features.

3. Methodologies could be developed that allow for more ethnoscientific descriptions of local marine biogeography. Further, questionnaires could include questions on values and spatial paradigms regarding the use and management of coral reefs and fishponds. The answers could then be linked to biogeographic feature attribute tables in the GIS.

4. Because of cultural differences in perception and value systems, questionnaires should be developed by Pacific Islanders using a methodology that identifies perceived threats and stresses to the marine ecosystems from a local perspective. For example, a separate question that allows people to comment on the threats to traditional access to fishing areas or coral reefs could be coded to the same geographic feature that the other user groups address in their questionnaire.

5. State government could fund and organise pilot programs to train interested Islanders in the use of GIS at onsite workstations that have modem access to the government GIS marine resources and cultural site databases. Although access to archaeological and sacred sites would be limited to certain individuals, locally designated fishers could have access to data on fishponds, fishing areas, and other marine-related resources in their areas.

6. An educational program could be initiated that encourages participation of local youth and their parents and grandparents to learn more about their native language, place names, and local biogeography, as well as about GIS and its applications to planning and resource management.

7. The State government GIS database on marine resources could be modified so that copies of data layers and related databases could be remotely accessed for local marine resource and planning purposes. At the same time, users could be encouraged to build their own databases and annotate their resource layers with local terms and names. Nonproprietary/noncontroversial GIS layers also could be placed on an Internet website, thereby allowing users to develop their own applications and annotated databases as needed.

8. Once remote GIS stations have been established and security measures implemented,

local TEK and other types of traditional knowledge may be shared, but only to facilitate planning and management for marine resource protection.

Finally, several concerns should be mentioned involving the use of GIS for the types of applications discussed here. These are that:

- Many indigenous categories of management are not static, but dynamic. Some cultural specialists would argue that once an indigenous management system is formalised it runs some risk of being severed from the culture that spawned it. This same argument is valid for the codification of traditional laws, rules, practices, etc. However, others would be quick to point out that some codification is essential to allow for government assistance in enforcement, monitoring, compensation, and so on;

- GIS has sometimes been 'sold' within regions as a panacea for all management problems. GIS is only another tool that still needs a specialist to optimise analysis of the results and interpret what they mean for management; and

- The analytical results from integrating TEK with GIS need to be funneled through an appropriate decision support system. GIS is not just for making elegant maps, but is also capable of highly sophisticated cartographic and predictive modelling and spatial analysis important in decision-making. There is a place for GIS applications in the Pacific using TEK; however, it needs to be appropriately integrated into existing local management systems, not portrayed as a replacement. If this is done, then GIS can enhance participation and representation in the local decision-making process.
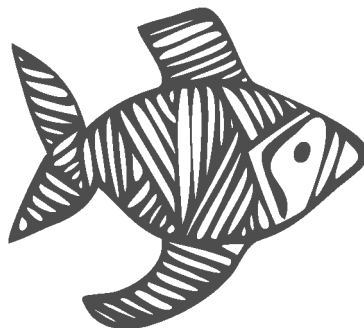
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Community culture invention – instant self anthropology using Community Quality Cabarets

by Professor Richard Tabor Greene[1]

Abstract

A tool that allows communities to recover parts of their own tradition while inventing new culture components for dealing with present challenges is presented here. Traditional and aboriginal cultures that, in their own opinion, are not effectively responding to the challenges of modernisation are generally forced to chose between either traditional culture elements or those foreign culture elements proffered by modernisation. A middle way that recovers and re-interprets traditional culture components and then uses them to suggest and guide community responses to particular challenges of modernisation may be needed. The Community Quality Cabaret described here allows considerable portions of communities to be engaged in inventing new images and practices that re-empower traditions, while directing such traditions toward a more positive and effective response to the local challenges of modernisation. Use of this tool in a traditional fishing community culture on Majuro is reported. How the tool can be applied to build bridges among stakeholders in conflict within communities is also described.

The germ of the idea

Those of us dealing with the differences of culture, whether it be gender cultures, subgroups within organisation cultures, national cultures, or the cultures of generations, among many others, have occasion to observe when and how communities represent to themselves what their own culture is. This is the role of anthropology, developed by a community itself, in the daily life of that community. Some people and communities seem almost entirely unconscious of their culture, whereas others bandy it about almost as if it were a collectively agreed on propaganda instrument to wheel out in every occasion, relevant or not. Whereas some people sophisticatedly reflect on their community and see patterns of value and practice evolution that any professional anthropologist would call 'culture', others lumber out bigotries of the most banal sort as their favourite representations of 'being a group', 'being a member', 'belonging here'. Although some forms of 'togetherness' seem to mean nothing but the 'togetherness' itself; others seem to represent something worthwhile that people can articulate.

When we succeed in locating when and where in daily community life an anthropology self-consciously built by the members of that community exists, it raises the possibility of that community (re)assessing the satisfactoriness and health of its own culture, and, should the need arise, improving it. Although few field anthropologists working with so-called 'traditional' cultures have reported such community-built anthropologies and their deliberate use for community improvement, a close examination of some ethnographies reveals a possibly less-than-conscious representation of culture and its use improve culture (see Eberts, 1995 for an interesting case of Japan generating new myths of 'quality').

The long-term problem

A major worldwide theme in the study of culture is the challenge that modernisation presents to traditional cultures. This can take the form of missionary-supported destruction of indigenous cultures in the name of a 'better' foreign religion, or the insidious undermining of an aboriginal culture by economically dominant foreign cultures, until mass alcoholism results. Key community dynamics measure the degree of destruction of challenged traditional cultures, such as: departure of youth for marginal or degrading occupations in the dominant or encroaching culture, or the undermining of the traditional male family role model as the pride and practical leadership of males is eroded by foreign culture values and practices.

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In general, whenever a choice is forced between staying with a traditional culture or switching to the encroaching modern one, human suffering and sub-optimal culture interactions result. This is a severe problem. Any long-term and sustainable solution should enable the blending of traditional cultures with those resulting from modernisation, and not demand switching among them.

The root causes of the long-term problem

The self-negating foundation of Western culture, as in turn the basis of modernisation culture, has long been observed and described (Campbell, 1986). A culture where, in principle, if we did something X way in the past, we should do it a different, non-X way in the future, is often said to stem from Descartes, Rousseau, Hobbes, Locke, and the Enlightenment ideal of freely choosing one's conditions of life by undoing all those 'unfreely' chosen parts that were inculcated during socialisation within a particular culture and community. Education as a 'leading out' from such unconsciously made commitments and a 'leading into' freely chosen ones, has been a Western ideal and a core assumption in modernisation culture worldwide (Berlin, 1991).

In the West, as well as in non-Western cultures, a countertrend has appeared which argues that Western (and modernisation) culture has become excessively self-negating (Campbell, 1986). Education as indoctrination into a culture and its beliefs replaces education as 'leading out' from unconscious commitments made in childhood.

A third element, from radical elements not necessarily grounded in empirical datasets, challenges both traditional cultures and modernisation cultures as inherently bigoted, unjust perpetuation of oppression of females, racial groups, or others. They are good at challenges and somewhat less convincing as proposers of new cultural values and practices to adopt if we agree to reject traditional and modernisation cultures (Dawkins, 1998).

In sum, we have self-negating cultures, self-affirming cultures, and other-negating cultures, all at odds with each other. A middle way among them, if found, would allow them to benefit from each other's strengths without being undermined by each other's weaknesses.

The short-term problem

In both traditional non-Western cultures or modern Western cultures a need for improving the strength and capability of cultures is evident. Both traditional and modern cultures are finding it dif-ficult to entice, attract or engage the interests of their own youth. Both are also having difficulty encouraging and supporting their own middle-aged members. So a general need for culture strengthening is quite evident (Campbell, 1986).

Similarly, both traditional and modern cultures suffer from dysfunctions in the process of establishing values and practices. Cynical leadership, defeatist non-adaptive responses to present challenges, or governments supplanting civic cultures until they die appear in both types of culture. In sum, a tool is needed to help both strengthen cultures and reduce their dysfunctional components.

The roots of the short-term problem

Atrophied festivals occur in both traditional and modern cultures. Often in traditional cultures art forms are split along generational lines between ancient traditions and modern entertainment. In modern cultures, mass entertainment supplant local participation in arts and festivals. People get used to coming, sitting, drinking, and leaving, rather than more expressive and personal forms of participation. Highly paid professionals at the centre get the attention, attenuating arts, participation, and fellow feeling in entire populations. Trying to respond to challenges when only parts of a society share images, rites, routines, and practices is often self-destructive.

Most societies see themselves as one culture rather than a complex mix of clashing cultures. Recent efforts to promote pluralism and diversity in industrial society workplaces have their counterparts in traditional cultures that suddenly face caste systems and other subcultures belying their image of themselves as uniform and homogeneous. It is futile to try to respond to challenges as one culture, when the reality comprises two or more clashing cultures.

An image from history – the fin de siècle cabaret in Europe

As disaffection with Victorian era culture increased throughout Europe, persons of various sorts found themselves in small cafes, where improvised song, dance, poetry, and drama, together with more marginal arts like puppetry, shadow theatre and mime, exposed the contradictions of society in rude, brute, direct, and strikingly effective ways. Performances in these cabarets served as mirrors of happenings in society ignored by traditional artists, publishers and politicians (Segel, 1987). At the same time, in Asconia, on the sides of a mountain in Switzerland (Green, 1986), free-love communities of artists and other intellectuals, like Kafka, Jung, Isadora Duncan, Freud,

and Hesse, turned daily life into improvisational art performances by people for each other.

As masses of rural people moved to the cities before and after the second world war they discovered daily life in the city was performance, with sidewalks and shopping malls being the stages where selves and excellence of self were displayed (Mumford, 1955). After the war, the mass entertainment industries could not satisfy the hunger for performance of ordinary people, a hunger that was not even perceived in the main venues of their societies. The global karaoke boom, instigated by Japanese industrial success, temporarily filled a tiny part of this hunger of ordinary folk for spaces of appearance before peers.

In all the above—fin de siècle cabaret, Asconia, sidewalk theatre, and karaoke—images from traditions were refurbished to relate them to contemporary issues and happenings. And *vice versa*, contemporary issues and happenings were refurbished to relate them to traditions and their values.

But what might happen if someone got serious about wrapping traditions in contemporary issues and wrapping contemporary issues in traditions? What might happen if all the latent performers in any community could be mobilised?

What might happen if ordinary residents of neighbourhoods were to invent new images for their culture's future, based on profound retellings and refurbishing of their community's traditions?

What if the cabaret, a form combining many arts to mirror society's situation and needs, could be reinvented so that any community anywhere could learn and apply it to their strengthen culture?

The rest of this article explores modifications in fin de siècle cabaret that might allow it to strengthen cultures and resolve culture clashes.

A possible role for self-conscious anthropologising of self in healthy community functioning

Awareness of own culture, first of all, helps achieve alignment among various culture elements (Bohannan, 1995). One culture axis is questions of existence, values that answer those questions, and practices that embody those values. These might be aligned better when communities build their own ethnographic accounts of themselves.

Another culture axis is events, the stories they give rise to, and the practices that arise from those stories. These might be better aligned when communities build their own ethnographic accounts of themselves. The subcultures of self, gender, age group (generation), and nation might be better aligned when communities self-anthropologise.

Another culture axis is owning culture, challenging culture, and rejecting culture (culture drop out) or renewing culture as a result. These might be better aligned when communities self-anthropologise. Alignment here can be understood using Eckstein's concept of anomie (Eckstein, 1955). Where one area of life is, say, democratic, and another area bureaucratic, and still another autocratic, what one learns in one area does not carry over to other areas. This makes for alienation and anomie. Where what is learned in one area does carry over to another or others, anomie is reduced. So in this sense 'alignment' can be understood as reduced anomie.

Further, communities given to perpetuating, preserving and remembering their traditions and culture may fail to adapt to their situations by modifying their traditions, values and culture to better handle challenges of the present and near future. Few communities purposefully thus adapt their own cultures. Events or tools for doing so might accelerate or deepen adaptive responses to present challenges.

Using good datasets, Denison examined whether cultures can be either too weak or too strong, or if they could be strengthened (Denison, 1990). He measured the strength of cultures of various corporations, compared the resulting strength measures, and measured the evolving strengthening or weakening of particular corporate cultures. Measuring the portions of populations espousing values practised by the corporation as a whole, the portions practising such values, the uniformity of response of population members to challenges, and like measures, were part of his efforts to measure strength of culture. (I am interested in devising a way for communities to measure the strength of their own cultures and strengthen them where and when needed.)

Peter Vaill studied high-performance organisations. His categories for describing such organisations overlap Denison's categories for describing strong cultures. With modifications based on my own research, Vaill's categories are shown below (Greene, 1997):

Work contradictorily

1. Work in a historic context, not a life-style improvement context – rehearse beyond life-span traditions and heroes (emphasise value you establish for the unborn, not the living);

2. Invest energy in the particulars – establish rhythm of engagement (examine tasks with much greater attention to details than others);

3. Be very conservative – maintain chosen form (this is being conservative about staying within the chosen form of working that brings high performance, not sticking with traditions);

4. Innovate radically within chosen form – encourage continual improvisation within chosen form (experiment, challenge, reverse, bring in new approaches, and the like, but only within chosen form of engagement);

Violate social norms

5. Maintain boundaries – in members, times, and spaces (make the transition to joining a group a real deeply felt personal decision, not a usual, casual joining up);

6. Be problematic to others – avoid external norms and controls (obey nothing in society or social expectations of others on your way to victory);

7. Scrounge resources – work based only on your standards not others' standards (improvise and opportunistically use any things, persons or situations that fit your needs, pure *bricolage*);

8. Use problematic parts – use others' rejects to excel (judge people only by their ability to play the roles within your chosen form that you need, not by their history or record elsewhere);

Know thyself

9. Have the ability to say no and not do things – skip non-fitting opportunities (carefully distinguish the necessary from the nice or possible and emphasise necessity);

10. Address the overall team paradoxon in the smallest unit – all members share major challenges (do not treat problems as individual but as systemic in nature);

11. Engage particulars of mission – see the uniqueness of who you are and what you do and who your customers are (do not do your thing any way but your own way);

12. Make people earn membership – joining requires years of work (establish layers of new discipline, coordination, chemistry between people, and require new members to master every layer);

Automate and value processes

13. Develop predictable behaviours – practice until all can guess each other's mind (make mastery automatic and instantaneous, so that coordination and changes of plans are extremely fast);

14. Improve responses to challenges – break your own routines and invent new routines rapidly (never become a stable target for opponents);

15. Value the intrinsics of the task, not rewards or fame – value the task processes, not ends (let history decide the ends, you just work the process);

16. Establish clear, shared purpose – non-perfunctory commitment (real motivation by each individual, not general vague group assent)

Create huge repertoires of ways to succeed

17. Do things without resources that others require months and permissions to do – make the bureaucracy catch up with you (use high-performance track record to keep independence from low performances around you);

18. Suddenly change venue and practice style – create challenging situations to adapt to (your adaptability muscles need regular exercise, which cannot be done if your practice environment is too stable);

19. Suddenly leave out key members and tactics – force stretching secondary roles until they become world-leading in performance by themselves (establish dependencies then disestablish them – create a huge repertoire of ways to succeed);

20. See what others do, improve it radically, then copy that improvement – use the best that ever lived as your benchmark, not just current opponents (never only copy but copy with improvements).

Establish coincidence dynamics

21. Ask questions about fundamentals – challenge own routines regularly (expose needs for doing routines better);

22. Supply coaching and resources instantly in response to member questions and needs – answer faster, deeper, and better than others (establish the same coincidence of genuine questions with resources for excellent answers

nearby that creates prodigies; be willing to answer stupid questions anytime)

23. Try out ideas and answers – do not individualise learning but get teams to support individual experiments (make learning and tinkering the culture, not doing the tradition the culture); and

24. Compete vicariously – view others' victories or defeats and practice what your group would do to respond (show one look, then switch to any of dozens of ways to handle opponents' moves).

It is clear from the items listed above that making a culture stronger involves lots of contradictory undertakings. It is not a matter of generating fanatical attachments where there were tepid ones earlier, because societies, if healthy, are a balance of detachment with attachment. Strengthening one arm creates distortions likely to be harmful in the long run.

The most radical need for self-anthropologising is the one stated by Joseph Campbell (Campbell, 1986). A student of the world's religions, and its base cultures, in his later years he concerned himself with the coincidence of so many traditional cultures failing around the world at the very time when Western culture seemed to be suffering from failings of its own. He hypothesised that the new religion would be global.

In contrast, writing at the same time, Alvin Toffler came to the opposite conclusion (Toffler, 1975). His hypothesis was the world would 'de-massify'; where seven or eight major world religions reigned, dozens would emerge, more local, more responsive, more bottom-up in origin.

Who is right? We do not need to know the answer. If we have a tool for getting the clash of traditional and modern cultures to mend and for strengthening cultures losing value to their members, then each group can use that tool to build its own solution, whether it be one global religion or many diverse local ones.

The Community Quality Cabaret – A tool for communities to mesh clashing cultures, strengthen weakening ones, and invent new ones

I developed the Community Quality Cabaret (CQC) over the 8 years between 1988 and 1996. It is designed for use in any community in the world. It can be used as an annual event in such communities, although with some modifications of procedure more frequent use is possible.

The CQC has the following five fundamental characteristics:-

(1) It is a combination of many arts; those traditional to a community, those threatening to the community through mass media or enticed youth, and arts utterly unknown in the community that it might learn from experiencing them;

(2) It uses dual packaging – packaging traditional meanings and images in a wrapping of modern art forms, and packaging modern art forms in a wrapping of traditional images and values;

(3) It is participatory in that major portions of a community design the cabaret, set it up, hold it, perform in it, and follow it up;

(4) It is multi-dimensional, a microcosm of the entire community, having economic, political, cultural, and institutional aspects and performances. (It is usual that the entire populations of communities attend the performances of CQC.); and

(5) Most importantly, it is targeted.

The CQC invents arts, acts and performances that will have a particular intended effect. Although not 'instructive' art, it is also not 'pure entertainment'. It inserts new images where they are needed; some of them 'stick' while others turn out to be useless. It is based on a thoroughgoing analysis of the economic, political, cultural, and foundational needs of a community. The clash of cultures in those domains is illuminated in detail, and images helping the community blend, mesh and transit among them are invented, then delivered in the CQC's performances.

A synopsis of the three phases of conducting CQC

There are three celebrations within any one CQC:

(1) within the set up process;
(2) within holding the CQC (often for entire populations of a community in successive performances); and
(3) within following-up the CQC.

The various arts and acts within holding the CQC are matched by arts and acts within setting it up and following it up. As the event is repeated over time, increasingly more art, artifice and act spill over from the performance content of holding a CQC into the set up and follow up processes. For example, where ticket sales may start out in the

first set up of a first CQC as ordinary people selling tickets, in a second set up for a second CQC, costumed actors representing new images of the community's future or new images of its recent past will sell tickets in street theatre events. In this way the art and imagery of the CQC infiltrate a community until performances are simply more central focussed points within a continual symbolic presence within daily life of the community.

The set up process involves an elaborate analysis of the hard alternatives in any community, in terms of issues, opportunities, images, feelings, moods, morale, and the like. This spirit analysis is usually at first done on behalf of the community by a small core group, but in later repetitions of the CQC process, it becomes distributed widely throughout existing organisations of the community. They perform the analysis on themselves, turning the results over to the crew setting up the CQC.

The follow up process involves inserting the images, stories and happenings of the CQC performances into appropriate places and processes in the community, to guide thought and action. At first, word of mouth personal diffusion processes are employed, but more systematic dispersal of images are devised over time, as subsequent CQCs take place.

Holding a CQC involves choosing one of two strategies. Either to insert a 'package' of new or modern contents within traditional community festivals, celebrations, or rites, or, inserting inside a modern cabaret of many arts a performance 'package' of traditional festival, celebration, or ritual elements from the community's traditional repertoire. Either way works.

After this decision has been made, acts are designed. The method reported on here is based on four acts, each dominated by one theme in a four-theme sequence such as: liberty, freedom, historic dream, foundation (from Hannah Arendt's model of revolution); or mystery, consciousness, care and tranquillity (from monastic Buddhism); or challenge, chapterise, replicate, sell out (from environmental politics theory of movement building).

The community spirit analysis produces tensions between or among certain alternatives, traditional practices being undermined or challenged by modern social forces, innovations proving pointless or worse than past practices, and so on. These suggest songs, poetry, dramas, comedy, puppetry, shadow theatre, audience quizzes, magic, dances, choral antiphonies, and similar works of art that capture the human, personal, emotional, social experience and significance of the dilemmas the community finds itself in.

Within each of the four acts, either the same theme sequence (as used to order the acts) is used or a different one selected, so there is a logical and locally relevant flow of meaning as each art work in each act is encountered by the audience. Finally, within each work of art—comedy, drama, song, etc.—the same or a different pattern of theme sequences is used. That makes for a three-layer fractal nature of the themes within each performance.

Particular on-going roles throughout the performance glue together the works of art in each act and the acts themselves. These roles are those of the master of ceremonies, audience jester (actor pretending to be a displeased or weird audience member), displaced stranger (actor pretending to be the phone, gas, water man or some other normal role from daily life somehow interrupting the performance), table service performers (waiters and waitresses who burst into dance, song, comedy), chorus, band, inappropriate magician (actor pretending to be a magician whose tricks do not work but whose quotidian preparations are tricks), and others. These roles constitute a second audience so there is a three-part structure: performers, cross-act roles as audience commenting on the performance, and actual audience of attendees.

CQC performances are usually scheduled so that all members of the community eventually see a performance. That may involve one performance in small communities or weeks of performances at various sites for large, dispersed communities or corporate workforces. Unlike usual performances, the community is encouraged to copy, mimic or improve on any arts and acts seen in these performances. The purpose, after all, is to offer new images for general use in helping the community navigate a future among clashing cultures, value sets and interests.

Synopsis of the community spirit analysis of the first phase of CQCs

Targeting arts and human image invention at key focal points in the emotional life of a community of people is anything but easy. Most societies depend on happenstance insights from disaffected, detached artists, who for their own reasons and at their own times burst forth with works of art that inform a community, make it conscious, raise its interests, rouse its passions, or deflate its pomposities.

But the CQC method assumes that arts themselves, however developed, are not enough. Communities need regular, thoroughgoing self-

analysis of the emotional substrata underlying confidence, action, hope, and despair. Such an analysis, if done by academics or researchers, fails to reach or excite ordinary populations. But if done by members of the community themselves and embodied by them in arts they devise, it becomes part of the life of the community, and can achieve widespread, deeply felt dissemination (often by word of mouth among related friends and family).

The analysis process examines every part of society, guided by a social process model. Groups of people are assigned each of 64 different social processes in society, to brainstorm the following topics:

- How are people feeling about this part of their lives?

- What happened in the past year here?

- What anxieties or failings are appearing in our society here?

- What opportunities are appearing before us here?

- What are our capabilities here?

- What should be we capable of here?

- What images from the forces challenging us appear here?

- What images from our traditions help here?

- What images from our traditions get in our way here? and

- What do we need here?

Characterisations are made of the past year, both its good and bad aspects and people's hopes and despairs, along with anticipatory characterisations of 'us next year', giving images of how we have suffered and grown, struggled and won, struggled and lost, or learned and become wise. How the styles, practices, habits, values, visions, associations of everyone have evolved in order this next year to handle its challenges better than we handled this year's challenges is specified anticipatorily through 'future perfect tense thinking' (we 'will have done X', we 'will have felt Y').

There is a lot more detail, but more is not necessary for this article. The above description suffices to make the point that a rich database gets handed to the team responsible for inventing arts, acts, and images of the performance of the CQC itself (see Figure 1 on next page).

Some principles of the CQC's way of operating

Structural principles:

1. The actors, singers, band, and all other performers of the CQC are pairs of people—one with previous experience or talent and the other wishing to learn. This prevents the CQC from becoming a boring repetition of the same old over-famous, overly-seen, overly-talented faces, such as permeate Western industrial nation entertainment industry events and products. People are coming not to see talent but to see effort rewarded, learning rewarded, and the spread and development of new talent.

2. The forces at conflict in the community—all of them—are parodied, named, characterised, transmogrified, and otherwise turned into talkable and visible entities, instead of remaining as latent, unconscious and unadmitted forces. This prevents shame, deep community biases and the hiding of problems and bad behaviours by power structures from. This is the pain of all art: bringing reality into the phony world of daily life's pretensions. Obviously a certain courage is required. If, however, artful comedy, song and the like are used, much of the sting can be mitigated in enjoyment, laughter, tears of passion and similar cathartic experiences.

3. Audiences at conflict are also joined in CQC's, so that arts expressing the latent and overt conflicts among them are offered to provide images of transition from zero-sum mindsets to win-win mindsets. Stakeholders at conflict in communities, hoping to ignore how side-effects of their actions harm families and individuals in related stakeholder communities can be brought together in CQCs, so that shared suffering and frustration becomes the basis of inter-stakeholder cooperation and joint action.

Analytical principles:

1. Demythologisation and remythologisation via CQCs

Communities take their myths too literally, over time. The CQC articulates the daily life events of consciousness that elements of any tradition are highlighting and pointing to, helping ground the tradition in human experience instead of blind obedience to a part no one understands very well. Remythologisation takes new elements of contemporary experience and refines them into the crucial events in consciousness they represent It then invents new images to add to the tradition to
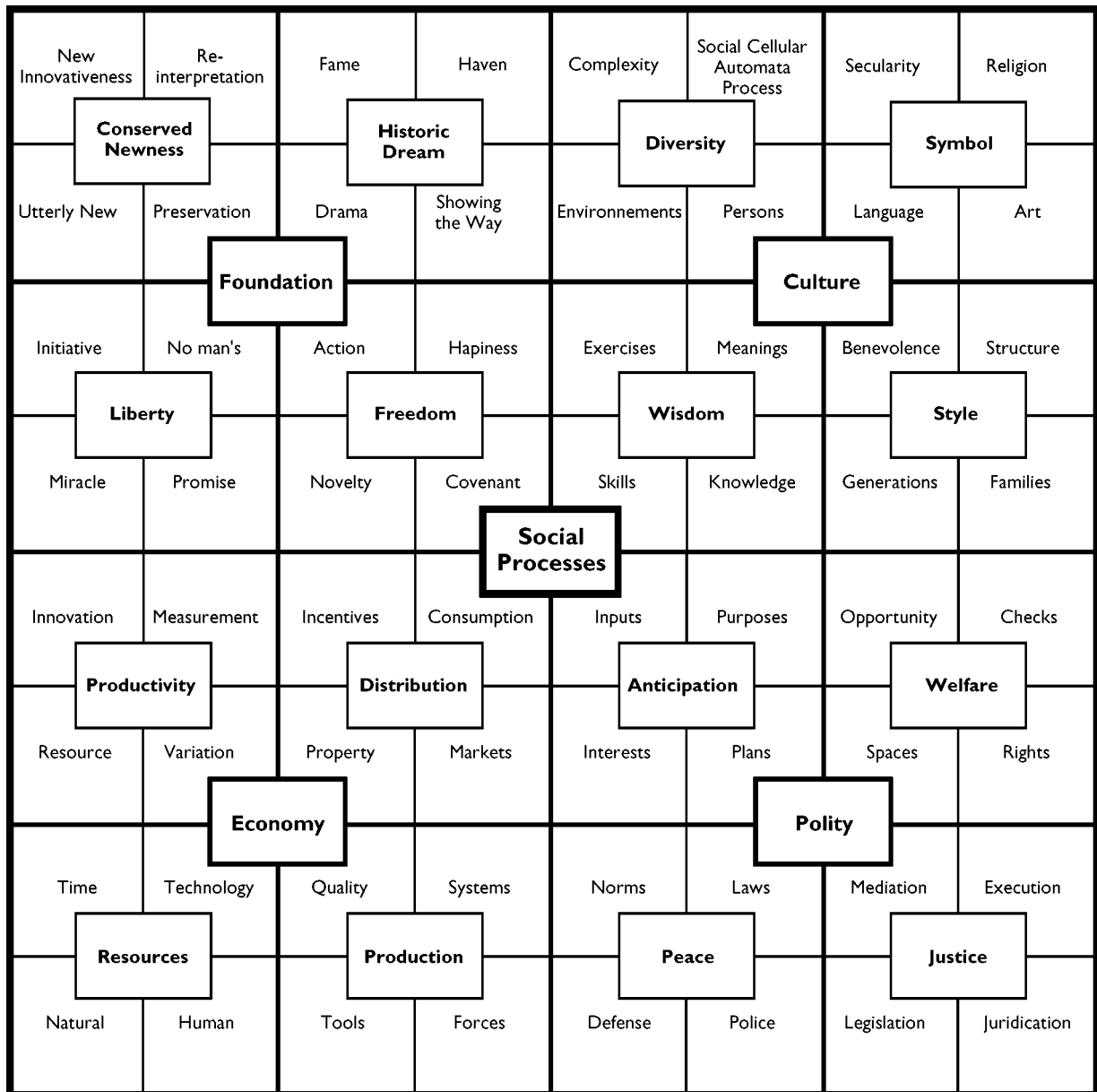
New Innovativeness	Re-interpretation	Fame	Haven	Complexity	Social Cellular Automata Process	Secularity	Religion
Conserved Newness		**Historic Dream**		**Diversity**		**Symbol**	
Utterly New	Preservation	Drama	Showing the Way	Environnements	Persons	Language	Art
Foundation						**Culture**	
Initiative	No man's	Action	Hapiness	Exercises	Meanings	Benevolence	Structure
Liberty		**Freedom**		**Wisdom**		**Style**	
Miracle	Promise	Novelty	Covenant	Skills	Knowledge	Generations	Families
			Social Processes				
Innovation	Measurement	Incentives	Consumption	Inputs	Purposes	Opportunity	Checks
Productivity		**Distribution**		**Anticipation**		**Welfare**	
Resource	Variation	Property	Markets	Interests	Plans	Spaces	Rights
Economy						**Polity**	
Time	Technology	Quality	Systems	Norms	Laws	Mediation	Execution
Resources		**Production**		**Peace**		**Justice**	
Natural	Human	Tools	Forces	Defense	Police	Legislation	Juridication

Figure 1
84 social processes organised on three levels of 4, 16 and 64 for elaborating community imagery issues

expand it to include the best elements in contemporary experience.

2. Demystification and remystification via CQCs

Communities over time accept and obey things out of habit rather than out of intelligent, realistic self-interest and self-care. Such unconscious giving over of oneself to ideas and authorities without real choice, reason and reflection helps to sustain injustice and political stability in communities. Demystification makes conscious such unwitting 'givings over' to powers and authorities, and resurrects live choice of such commitments as what is basic and real. Remystification gets communities to choose to focus, to rehearse, to remind, to advertise images that transition them into the kind of next year they want. It self-consciously commits the community to what they otherwise might unconsciously and blindly commit to.

3. De-mass-ification and re-mass-ification via CQCs

In all too many cases, mass production, mass entertainment, mass retailing, and other multinational production systems that invade and make

claims on local communities have substituted the most banal uniformity and least-common denominators for richer local practices and beliefs. De-mass-ifying society in CQCs occurs along with a kind of re-mass-ification of entirely local cultural inventions and images, propagated by each CQC into wider areas and communities.

The case of Majuro

In the mid-1980s, 302 people in a corner of the mid-Pacific island of Majuro experienced three successive CQCs in three successive years, along with pre-test and post-test data on impact on various aspects of the community. The target population consisted of 14 extended families in a close-knit community on Majuro, which still fished for a living, rather than accepting the welfare that had degraded and demoralized most of the island.

This community was chosen because it seemed to be a cultural sub-unit of some intangible substantiality among the decay around it. It was hoped that the CQC process would capture and reveal the subtle shared values and imagery underneath the community's coherence, while helping the community invent new imagery to assist it in dealing with the rampant materialism and commercialism around it.

The first year, a usual end-of-year celebration, part religious ceremony of members of the community who were Christian, and part indigenous rite of the fishing community, was amplified into a CQC. A lone outsider visited the community for a month to study its traditions. After a month of ambulatory conversations throughout the community, he was incorporated into a fishing unit of two families who shared ownership of a deep-sea trawler. After a month of work on the boat, he began meeting leaders of the men's group that informally ran the community and that monitored its relations to the surrounding communities. The pride of this close group of families in their coherence compared to the welfare state of much of the rest of Majuro was noticeable.

He described to the leaders his idea of a community-spirit analysis done by him, assisted by members of the community, leading to additions to the year-end festival week. The leadership agreed and appointed three middle-aged men and two women to help conduct the community-spirit analysis. To cut a long story short, this committee of six set up a CQC that was 2 hours long, had 4 acts of 6 art-forms each, involved 60 members of this 302 person community as performers, and 33 members as follow-up personnel, to inject imagery from the CQC into other, later community events and processes.

The largest available facility in the area comprised 4 open-sided garages that happened to face each other across an alley. This was traditionally turned into a giant tent area for the community's end-of-year festival week, and the CQC was fitted into this overall week of traditional celebratory activity. The CQC was offered four nights during the week, with people who had not attended given the better seats, without excluding repeat attendees.

Second-year and third-year repetitions of this process included some changes. There was a great increase in people wanting to perform, so that the spirit analysis team members, 60 performers, and 33 follow-up personnel of the first year, were replaced by entirely new people the second, and again the third year (to the extent possible, given 302 in the entire target community). All the 302 members of the community were involved in setting up, performing, or following up the CQC—with the exception of 2 elders who were too frail in their opinion to accept roles offered to them (often importunistically by family members).

Pre-test, post-test results summary

Measures of which values the community shared, how widely they were shared, and how deeply they were held within the community were made via a paid questionnaire (people completing it were paid the modest honorarium of US$ 25), before any outsider entered this community of 302. The same measures were made six months after the CQC, for each of the three years that it was held. Included in the questionnaire were items measuring how people viewed their personal, family and community prospects in the coming year, and what they expected would be different in the coming year from the present one. The most frequent responses are shown in Table 1.

The Majuro case: cost benefits

Despite its incompleteness, Table 1 reveals a significant change in self-imagery in response to random sampling of the 302-person target population after four two-hour performances of community quality cabarets. There is evidence in Table 1 that latent pride in their community became stronger and more articulated as CQCs were held. Such evolution in imagery six months after a two-hour performance is impressive in cost-benefit terms. However, there were costs other than simply the work of community-spirit analysis, and holding CQCs.

One such cost was the emergence of disaffected subgroups within the 302-person community which, encouraged by the mood unleashed by the CQC, made something of a nuisance of themselves.

This at first was not attributed to the CQC but later it was, reducing enthusiasm for continuing it.

Another such cost was that the enthusiasm right after each performance and lasting for a few weeks dissipated because community conduits were too undeveloped and too lethargic to respond. This frustrated the most deeply moved participants. Follow-up activities in future CQC administrations need to examine carefully how to widen such community conduits for newly interested or engaged people.

One benefit appeared that was not directly intended. Two factions in the community, not immediately apparent to outside observers, ended up creating together new images of cooperation as they worked together in set-up teams. Competitive fishing between them was replaced by cooperative fishing, after the second CQC. This demonstrated the power of the CQC experience to mesh values of conflicting stakeholders.

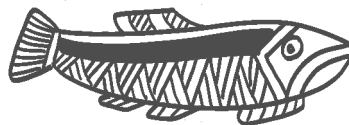## Managing by events – New ways to deliver management functions

The CQC is one event type in a whole menu of events. Management by events is a theory of how to replace use of a social class of 'managers and leaders' to deliver management functions with events wherein people apply managing functions to themselves. In addition to the CQC the following event types (among others) have been widely applied: problem-finding workouts, cause-finding workouts, solution-finding workouts, implementation-starting workdays, research assemblies, participatory town meetings, and problem-solving workouts. By taking functions that in the past were performed by elite leaders or staff experts and getting hundreds to do those functions much faster in mass workshop events, organizational learning is enhanced and the power distances between social roles is reduced (Greene, 1993, 1994, 1995, 1996a, 1996b, 1997a, 1997 b, 1998).

Table 1:   Change in self-imagery on Majuro

Most frequent responses	Before 1st CQC	After 1st CQC, before 2nd	After 2nd CQC, before 3rd	After 3rd CQC
Value behind most admired person of the present year	Friendly	Friendly	Friendly	Friendly
Value behind most abhorred person of the present year	Untrustworthy	Untrustworthy	Resists change	Resists change
Value most adaptive for community's biggest challenge	Peace of mind	Love	Unity	Coordinated effort
Value most mal-adaptive for community's biggest challenge	Disharmony	Unrewarded effort	Unrewarded effort	Conservatism
Personal prospects image	As usual	As usual	Maybe some opportunity will appear	Projects with my friends
Family prospects image	Up and down	Up and down	Up and down	Up and down
Community prospects image	Nothing going on	Nothing going on	Nothing going on	Get your act together
Habits of community in the way of what the community needs	Being a king of a shrinking pond is better than uncertain effort and future	Blaming everybody else for one's own troubles	Letting bad ideas from general society get established inside our community	Letting bad ideas from general society get established inside our community
Habits of community helping the community meet its current needs	None or no response	Helping out other boats when help is needed	Rejecting ideas from outside	Setting higher standards for us than those around us use

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New Publications

Introduction to the special issue on a modern role for traditional coastal-marine resource management systems in the Pacific Islands. In: Ocean & Coastal Management vol. 40, nos 2–3, pp. 99–270, (1998). Special issue edited by Kenneth Ruddle. (Price of single issue not indicated.)

A special issue of *Ocean & Coastal Management* has just been published. It contains the following seven papers, each of which is described briefly below.

Tim Adams *(Director of the Marine Resources Division, Secretariat of the Pacific Community (SPC), BP D5, Noumea Cedex, New Caledonia).* 'The Interface between Traditional and Modern Methods of Fishery Management in the Pacific Islands'.

In this paper Adams examines the coastal fisheries management interactions between government and local community. His discussion is illustrated with examples from Cook Islands and Fiji of positive government-community interactions, and by a general discussion of negative interactions. In general, fishery scientists tend to discount the role of the community when describing and quantifying fisheries. This is not helpful. Further, local initiatives arising from views that have evolved over centuries should be distinguished from those stemming from modern entrepreneurialism. The author concludes that its diversity is a major advantage of community-mediated management over other types.

Shankar Aswani *(Social Science Research Institute, University of Hawaii, Honolulu, USA,* and currently with the Department of Anthropology, University of Auckland, New Zealand) 'Patterns of Marine Harvest Effort in Southwestern New Georgia, Solomon Islands: Resource Management or Optimal Foraging?'

Without a model to account for either the occurrence of conservation and/or depletion of resources, it has become widely accepted in maritime anthropology that marine tenure institutions are cultural systems designed to conserve marine resources. In his paper, Aswani offers foraging theory as an alternative theoretical framework to examine the diversity of human resource exploitation strategies in coastal ecosystems. The results generated by the foraging models are considered in relation to their significance in linking ecological evolutionary approaches in anthropology with coastal resource management.

Paul Dalzell *(Pelagics Fisheries Biologist, Western Pacific Fisheries Council, Honolulu, Hawaii, USA.)* 'The Role of Archaeological and Cultural Historical Records in Long-range Coastal Fisheries Resources Management Strategies and Policies in the Pacific Islands'.

Dalzell argues that since conventional fisheries science is of limited use for long-term fisheries management and policies in the Pacific Islands, managers following a data-less management paradigm require other information sources to assess the impacts of various management scenarios. Such alternative sources of information as archaeological and historical data can be used to develop fishery management initiatives. Archaeological studies in the Pacific Islands over the past 50 years provide a wealth of information on the long-term subsistence exploitation of fish and invertebrates from nearshore coral reefs and lagoons. Other informa-

tion from more recent historical sources is also examined for its usefulness in assessing the impacts of commercial fishing.

Simon Foale (*Department of Zoology, University of Melbourne, Parkville, Victoria 3052, Australia.*) 'Assessment and management of the Trochus fishery at West Nggela, Solomon Islands: An Interdisciplinary Approach'.

Understanding the management status of small-scale fisheries requires comprehensive analysis of the state of the fished population(s), using rigorous stock assessment and other tools of fisheries biology, in addition to socio-cultural studies. Foale describes several methods used to assess the artisanal trochus fishery at West Nggela, and discusses the social and economic factors influencing the performance of the fishery. The local system of customary marine tenure and various categories of fishers' ecological knowledge about trochus are discussed. Local knowledge is examined in terms of the categories of biological and ecological information considered by most fishery biologists as essential to the assessment and management of a fishery.

Tom Graham and Noah Idechong (respectively, *Scientific Officer and Executive Director, Palau Conservation Society, Koror, PW 96940, Republic of Palau*) 'Reconciling Customary and Constitutional Law: Managing Marine Resources in Palau, Micronesia'.

One of the thorniest issues in adapting traditional resource management systems to a modern purpose concerns the articulation of customary and constitutional law. Since European contact with the Pacific Islands many hitherto sophisticated systems of resource tenure and management have been either eradicated entirely or severely eroded. The authors examine this process and its contemporary consequences in Palau. Owing to a combination of a series of court decisions that illustrate the incompatibility of customary and constitutional law and a lack of legislative initiative to reconcile them, purely customary authority has been relegated to only minor matters. As in many Pacific Island nations, independence has contributed to the erosion of traditional tenure and management systems in Palau. But recent village-level initiatives may portend a return toward decentralized control over inshore resources. The critical constitutional provision that inshore resources are owned by the 16 states allows villages to exert increasing control over them. The states have done so in response to increasing resource scarcity from increasing fishing pressure, growing demand from the marine-based tourism sector, and likely resource degradation from

infrastructure development. But to be effective, emerging local management regimes require national government support. So far, little has been forthcoming.

Edvard Hviding (*Associate Professor, Department of Social Anthropology, University of Bergen, N-5007 Bergen, Norway*) 'Contextual Flexibility: Present Status and Future of Customary Marine Tenure in Solomon Islands'.

The author discusses some long-term continuities in the socio-political dynamics of customary marine tenure in the Melanesian South Pacific. Based on extensive field research, and with particular reference to the pan-Melanesian concept of *kastom*, the author exemplifies how customary marine tenure and its social contexts are challenged and transformed by external economic and political pressures. These pressures and responses are discussed with reference to emerging legislative contexts of customary tenure. The relationship between external challenges and local transformations is not one-sided, since modern pressures may lead to organizational innovation and reinforce the political base of customary control over marine resources.

R.E. Johannes (*Consultant, R.E. Johannes Pty Ltd. Bonnet Hill, Tasmania 7053, Australia*). 'Government-supported, village-based management of marine resources in Vanuatu'.

In the early 1990s, coastal-marine resources management based on traditions, experienced an upsurge in Vanuatu. The Fisheries Department of the national government was the catalyst for this movement. Johannes analyses this process based on his survey of 26 villages, only one of which had not introduced new village-based marine resource management measures between 1990 and late-1993. Although government assistance and advice covered only trochus, success with management of this fishery prompted villagers to introduce controls over fishing for many other species of fish and invertebrates.

Johannes demonstrates that the experience of Vanuatu yields many lessons for initiating effective, inexpensive, government-assisted, village-based marine resource management. At the same time he shows how a local shoestring operation can be far more successful than a fisheries development project costing tens of millions of dollars.

Kenneth Ruddle (*Professor, School of Policy Studies, Kwansei Gaknin University, Kobe-Sanda, Japan*) 'The Context of Policy Design for Existing Community-based Fisheries Management Systems in the Pacific Islands'

In this paper the author addresses some of the broader contextual issues that should be appreciated in policy making with respect to a potential modern role for traditional management systems in general, and in the analysis of a future role for any given system. The principal external pressures forcing change in systems are exemplified; the recognition of the potential role of existing community-based fisheries systems summarised for some Pacific Island nations; and the principal policy alternatives regarding the potential role of existing local fisheries management systems are examined, together with the main criteria for determining whether or not a system can be adapted to fulfil modern requirements.

For a copy of the entire volume, please contact Elsevier Science Ltd. For a copy of the individual papers, contact each author directly, at the addresses given above.

'Customary Marine Tenure in Australia.' In: Oceania Monograph 48. Sydney: University of Sydney, 1998. Edited by Nicolas Peterson and Bruce Rigsby (price not indicated).

Although a stereotype of Aboriginal people is that they live in the arid desert lands of Central Australia, most lived and still live along the coast near the sea. In the current era of native title, *Customary Marine Tenure in Australia* is a timely collection of essays which bear on the traditional ownership of 'sea country'. This term includes the range of marine environments that extend from the beaches to offshore islands, reefs, sandbars, sandbanks, cays, and even to the outer Great Barrier Reef.

Key essays locate the book within the general discourse on property and land and sea tenure, and specific cases illustrate a diversity of marine tenure regimes previously unrecognised in the literature.

Contents:

1. Introduction, *Nicolas Peterson and Bruce Rigsby*

2. A Survey of Property Theory and Tenure Types, *Bruce Rigsby*

3. Re-imagining Sea Space: from Grotius to Mabo, *Nonie Sharp*

4. Aboriginal Fishing on the New South Wales South Coast: a Court Case, *Scott Cane*

5. Use and Continuity in the Customary Marine Tenure of the Whitsunday Islands, *Bryce Barker*

6. Salt Water, Fresh Water and Yawuru Social Organisation, *Patrick Sullivan*

7. Marine Tenure in the Wellesley Islands Region, Gulf of Carpentaria, *Paul Memmott and David Trigger*

8. 'We Always Look North': Yanyuwa Identity and the Maritime Environment, *John Bradley*

9. Customary Marine Tenure at Groote Eylandt, *Kingsley Palmer*

10. *Gapu Dhulway, Gapu Maramba:* Conceptualisation and Ownership of Saltwater among the Burarra and Yan-nhagu Peoples of Northeast Arnhemland, *Geoffrey Bagshaw*

11. Ownership and Resource Use on Islands off the Liverpool River, Northern Territory, *Peter Cook and Gowan Armstrong*

12. The Sandbeach People and Dugong Hunters of Eastern Cape York Peninsula: Property in Land and Sea Country, *Bruce Rigsby and Athol Chase*

13. The Sea of Waubin: The Kaurareg and their Marine Environment, *Michael Southon*

14. The Promise of Native Title and the Predicament of Customary Marine Tenure, *Sandra Pannell*

Copies and information concerning back numbers can be obtained from The Secretary, Oceania Publications, 116 Darlington Road, University of Sydney, NSW, Australia 2006; contributors may be contacted as follows with requests concerning individual articles:

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RUDDLE, K. (1998). Traditional community-based coastal marine fisheries management in Viet Nam. Ocean & Coastal Management 40: 1–22.

Despite more than a century of colonial occupation, radical political and administrative change, and more recent motorisation of fleets and gear introductions, there remains in Viet Nam a still functioning tradition of local stakeholder organisations *(van chat)* by which marine fishing communities historically regulated the fishery and ensured mutual assistance for their membership. Such systems remain strong in many coastal communities, especially in the Central and Southern regions, largely because their moral authority and leadership is deeply rooted in and legitimised by traditional religion, expressed in the community 'whale' shrine.

In 1963, one such community organisation, in Binh Thuan Province of the Central Region, comprehensively documented its traditional regulations to inform future generations. That document is analysed in this article, and supplemented and complemented by information from seven other marine fisheries *van chat* in the Central and Southern regions. A brief historical introduction and a description of the official fisheries management systems are followed by an analysis of the structure of the traditional community-based system, in terms of authority, rights, rules, monitoring, accountability, conflict resolution, and sanctions.

New Projects

The Capacity Building for Environmental Management in the Pacific (CBEMP) project

The Capacity Building for Environmental Management in the Pacific (CBEMP) project is a SPREP implemented, UNDP funded project to assist twelve Pacific Island countries improve the management of their natural resources. Participating countries include Fiji, FSM, Kiribati, Marshall Islands, Nauru, Niue, Palau, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu.

The main objective under the project is to integrate traditional and non-traditional resource management systems to develop a more effective management system that will contribute to job creation and sustainable livelihoods for both men and women.

The Preparatory Assistance phase, which commenced in December 1997, instigated country driven consultations to identify priorities capacity building activities to address the project objective and the resultant draft project document reflects country identified needs.

The implementation of project activities will occur under the country selected thematic areas of Sustainable Tourism; Marine Resources; Food Security and Nutrition; and Forests and Trees.

Project activities include:
- Assistance and training in the review, collection and documentation of information on traditional and non-traditional resource management practices;
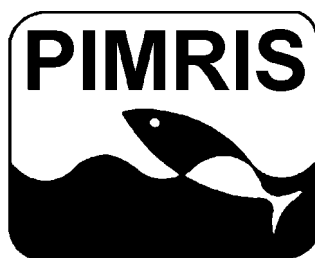- Review database needs and conduct training in database establishment for the collation of information on traditional and non-traditional knowledge and practices;
- Information collected will be used to develop educational resource materials, assist in the formulation of environmental legislation and to undertake awareness raising activities for decision makers at the government and non-government level, and
- The identification of potential demonstration projects that highlight beneficial traditional practices and encourage job creation.

CBEMP project activities will be linked with the implementation of existing SPREP, SPOCC, UNDP and other UN organisation projects as is designed to complement projects being implemented by other organisations.

Opportunities for supplementary funding are being investigated to consolidate project activities in the participating countries. Donors interested in participating in the project should contact:

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