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ARCHAEOLOGY,
AGRICULTURE
AND IDENTITY

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ARCHAEOLOGY, AGRICULTURE AND IDENTITY

Papers presented at the 2nd *No Barriers* Seminar, April 28, 1999

Preface

Helene Martinsson-Wallin¹, Paul Wallin² and Knut Nordby³

This year a great interest of the *No Barriers* grant was indicated by the many qualified applicants. Among the applicants the *No Barriers* committee awarded the 1999 *No Barriers* grant to Dr. Christopher Stevenson for his project "The Intensification of Agriculture in Early Rapa Nui [Easter Island] Society". Dr. Stevenson is Director of the Obsidian Hydration Laboratory, and Principal Investigator at "Archaeological Services Consultants Group", Columbus, Ohio, USA.

This project will fill a gap regarding the study of Easter Island agriculture and its development. This subject has never been thoroughly and systematically investigated using modern archaeological methods. The agriculture and its organisation, which provided the economical base, must be regarded as the most significant factor in the explanation of the cultural development and the unique expressions shown in the Easter Islanders' stone work, consisting of hundreds of giant statues and huge temple grounds. Such a manifestation required well-controlled production and distribution of food.

Dr. Stevenson's project is based on test-excavations that will be conducted in deep sediment traps. This makes it possible to perform reconstruction of the depositional history of the landscape. Geomorphologic analyses (of earth, pollen and phytolith samples) allows the investigation of changes in the vegetation and the landscape. Prehistoric gardens and fields may also be discovered.

To achieve chronological control, each stratum found will be dated by obsidian hydration and AMS (Carbon-14) dating methods. This investigation will also be of importance for other Polynesian populations, for example on New Zealand and Hawaii, who also relied mainly on dry-land agriculture for their food supplies.

Dr. Stevenson is directing this project in collaboration with the Easter Island archaeologist Sonia Haoa and the American PhD student Joan Wozniak from the University of Oregon.

The *No Barriers* Review Committee emphasize that Dr. Stevenson's project is interdisciplinary, innovative and of great archaeological importance - up to now, Easter Island agricultural history has never been systematically studied.

This years *No Barriers* seminar focused on "Archaeology, Agriculture and Identity". Seminar leader was Helene Martinsson-Wallin and papers were delivered by Dr. Christopher Stevenson, Sonia Haoa (president of FIDPEI),

Dr. Thor Heyerdahl (KTM), Dr. Edvard Hviding (University of Bergen), Dr. Paul Wallin (KTM), MA Reidar Solsvik (University of Bergen) and Dr. Arne Aleksej Perminow (University of Trondheim).

At a first glance food and food production may seem to be a basic and simple matter. However, when taking a closer look at our food, it means more than just survival to many of us. Food and food-production are intimately tied to the structure of a society and different power relations within society. Labour investments and strong feelings are also some ingredients that are tied to these matters. As a cliché we for example say; "you are what you eat", but on the Island of Mare in New Caledonia Hmae mentions that this is not just an empty phrase since they consider the jam root as their ancestor.

Food-sharing and food production are in most societies a social event limited by rules and regulations based on cultural agreement. The various produced or hunted food items may for example be the same in two different societies but the conception and meaning relations about the various food items may differ. The attitude of the effect of the consumption of food also differ. To be on a diet is a trend among western women and with the globalization effect this now also is the case in Tongan society which previously seem to promote the attitude "the bigger the better". However, weight is still an important concern for the Tongans where contests in weight loss have become very popular.

Various food items and the handling of them may also be seen from a ceremonial and ritual aspect as for example concerning the bird man ritual on Easter Island where the bird egg played a central role.



Christopher Stevenson at the *No Barriers* seminar, April 1999.

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Diminished Agricultural Productivity and the Collapse of Ranked Society on Easter Island

Christopher M. Stevenson¹
Sonia Haoa²

Introduction

A popular theme in the archaeological literature of Easter Island (Rapa Nui) has been the reasons behind the “collapse” of the social system in the latter quarter of the 17th century. These discussions fall into two general categories. The first approach can be labeled as the *ecological degradation* scenario (Bahn and Flenley 1992, Mulloy 1978). In this model island settlers embarked upon a long and continued history of resource exploitation and habitat modification that resulted in the extinction of plant and animal species, including the total elimination of the native palm (*Jubaea*). A second approach examines the arguments for *climatic change* as being one of the more significant variables that effected the environment and the island population (Hunter-Anderson 1998, McCall 1993, Orliac and Orliac 1998). In this thesis, the Rapanui population are considered to be ecosystem managers that were not on a strict trajectory of resource depletion. However, despite attempts to conserve resources and promote regeneration, detrimental environmental changes (eg. deforestation) were brought on by shifts to a dryer and cooler climate during the Little Ice Age.

Irrespective of the model selected, changes in the island environment are presumed to have stressed the socio-political and religious systems to a point that required a significant restructuring. The elimination of wood resources is proposed to have reduced off-shore fishing, fuel availability and the ability to have moved statues. Secondary effects such as increased soil erosion and reduced soil fertility are also proposed to have diminished agricultural productivity, thereby reducing the overall level of the food supply.

This causal link between habitat change/deforestation and social reform has been characterized as overly simplistic (VanTilburg 1994) and lacks detail about the cultural processes behind the reorganization of the social system. To fill this void, we propose that a model of prehistoric political economy may be developed by looking at the fundamental structure of Rapanui chiefdom society and the modes of agricultural production. To develop this model, we focus on four questions: 1) What were the sources of chiefly power and authority in prehistoric Rapanui society? 2) What were the political strategies that legitimized and sustained political position and authority? 3) What were the environmental constraints and technological limits of the agricultural production system that affected the elite decision making process? and 4) What were the weak components in the system that failed and led to a socio-religious reorganization? By addressing these basic questions, we hope to explain

in greater detail not only why one social form collapsed but how the new social institutions managed the economic and political pressures of the period.

The Nature of Chiefdom Society

The founding settlers of East Polynesia were organized in a form similar to that of Ancestral Polynesian Society (Kirch 1984). The population was typically organized into descent groups, each of which was headed by hereditary chief whose leadership combined both sacred and secular roles. Descent was through the male line which was often tied directly to the gods or deified ancestors. This sacred character of the chief legitimized the authority of the office which managed the societies' annual ritual cycle. His position was further strengthened by the concepts of personal sacredness (*mana*) and the ability of the chief to forbid (*tapu*) specific activities or the use of certain resources. With this ideological backing, the elite members of society established a link between economic prosperity and their hereditary office (Kirch 1991).

Earle (1991) and Gilman (1991) have proposed that chiefly authority requires not only an ideological legitimacy but control over basic economic resources such as agricultural land. To have a long term and stable political system this control is fundamental since it regulates the daily lives of the larger population of unranked persons who depend upon it. Thus, access to the physical resource becomes the source of chiefly power while ideology becomes the means by which it is controlled. The control over agricultural land, or the means of production, is expressed by chiefly right of ownership which is ideologically justified.

Chiefdom organizations are in many respects voluntary organizations since the elite do not possess sufficient coercive force. If the cost of compliance to chiefly desires is too economically burdensome, then persons may relocate to other chiefdoms or islands. Therefore, in order to maintain an integrated structure, chiefs engage in a series of strategies to keep their political factions intact (Brumfiel 1994). Earle (1991) lists a series of strategies used by political players that expand upon the two fundamental themes in ranked Polynesian society and we will summarize them here.

First, most forms of social organization require a source of surplus for support (Sahlins 1968). This surplus is generated through control of the means of production and developing a reservoir of social obligations, or debt, within the descent group. This is accomplished through recurrent feasting and gift giving over the annual cycle or by funding improvements to the subsistence system. For the latter, this may mean the construction of an irrigation system or the building of agricultural terraces. This new infrastructure may substantially increase the level of production and improve the overall amount of food available to a household, thereby, supporting elite requests for added production. If successful, this process can result

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in a “staple finance” (Earle 1989) economy that supports the chiefly class.

Secondly, a series of strategies are also required in kin-based societies to continually reinforce the ideological foundation of the elite segment (Anderson 1994, Earle 1997). These strategies may include reinforcing the existing tenets of the religion through elaboration of costume, insignia or architecture. In many cases, new symbols or “esoteric knowledge” (Helms 1979) connected with an external and complementary ideology from outside the home territory may be used to further distinguish the elite from the commoner population. Chiefs may also claim a right to specific resources within the chiefdom territory and use that as leverage to impose debt and boost production. Such resources might include a variety of lithic or clay sources useful in tool manufacture. Alternately, internal surplus may be used to purchase exotic wealth items acquired from long distance localities. These precious items also become symbols of high status and privilege and an additional marker of legitimacy from outside sources. The goal of the elite segment will be to choose a set of strategies that will secure their position of control with respect to the larger population. However, a full array of potential strategies will usually not be available and will depend upon the environmental and social context of the region.

The Easter Island Chiefdom

In the discussion below, we comment on the island setting inhabited by the Rapa Nui population. We describe the island environment, the means of production and the difficulties that may have been encountered in the initial part of Rapanui prehistory. We then use the archaeological data to build a model of what we believe were a series of strategies used by the elite population to establish and reinforce their privileged position in society. Lastly, we examine the model and ask what were the potential weaknesses which could have caused one or more of the strategies to fail and thus lead to a new “negotiated” political order.

Contextual Conditions

The process of exploration and colonization (Irwin 1992) led the founding population of Easter Island from the Mangareva, Pitcairn, Henderson region (Green 1999) to a highly circumscribed physical environment. The island was small (64 square miles) and located more than 1600 km from another landmass (Figure 1). The degree of social circumscription or isolation experienced by the settlers is however, open to debate. In other parts of East Polynesia, interaction spheres were active until the 14th to 16th centuries (Green 1999) and multiple contacts occurred with the Hawaiian Islands (Green 1995) and possibly New Zealand (Green 1994, Sutton 1994). Significant inter-island interaction has been documented between some of the more spatially separated islands in the South Pacific Ocean such as Mangareva, Henderson and Pitcairn (Weisler 1996). However, to date researchers have not been able to muster a large body of evidence that demonstrates repetitive and

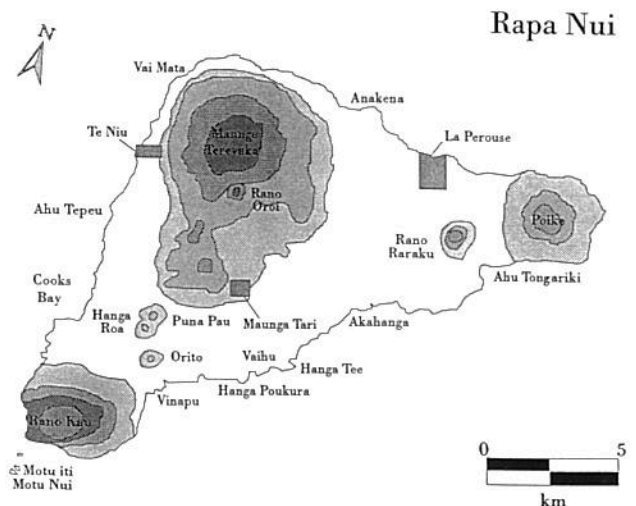


Fig. 1. Map of Easter Island (Rapa Nui) with place names mentioned in the text.

continuous contact between Rapa Nui and locations to the west. Post settlement contact is argued for by reference to the oral history, linguistic evidence and the proposed late arrival of the sweet potato (circa AD 1100-1200) after its introduction to the Marquesas/Society Islands/Cook Islands core area around AD 1000 (Green 1999). Until physical evidence emerges for a higher frequency of inter-island interaction, the degree of physical and social circumscription for Rapa Nui is considered to be high. The other influential variables such as proximity to routes of trade and external communication are therefore not relevant considerations.

The resource base of wild foods at the time of settlement was varied, in comparison to its composition at European contact, yet very limited in comparison to islands at higher latitudes. Forty-nine species of plants are believed to have been native to Rapa Nui yet most of these consisted of grasses, sedges, reeds and ferns (Flenley 1993) and were of little to no food value. Only two trees were endemic to Rapa Nui and consisted of the palm (*Jubaea*) and a scrubby plant known as *Sophora toromiro*. The palm nut was only a few centimeters in diameter and contained little edible material. Seed bearing plants which were cultivated and consumed in other parts of the world included *Polygonum acuminatum* and *Chenopodium ambiguum* but there is no evidence for their consumption on Rapa Nui.

The avian fauna was much more varied than present day and consisted of approximately 25 bird species, only one of which still nests on Rapa Nui today (Steadman et al. 1994). A land rail (*Porzana* sp.) has also been documented but is now extinct. Significant deposits of larger marine fauna such as dolphin/porpoise (Delphinidae) and a few seal have been retrieved from early deposits (AD 980-1420) at the coastal ceremonial center of Ahu Nau Nau (ibid.) and at Puapau Cave (Smith 1961) but are lacking in the faunal assemblages at habitation sites located inland. Land mammals are absent from the indigenous fauna but fish species were numerous. Over a 160 species are known for Easter Island but only a fewer number of

these species were frequently captured based upon the faunal assemblages recovered from caves (Ayres 1975). Other marine resources such as shells, sea slugs and sea urchins were consumed but were generally small and more suited for adornment. Three endemic crustaceans are present on the island but none have been located at archaeological sites.

Non-food resources are distributed at point locations around the island. Obsidian occurs at three quarries (Motu iti, Rano Kau, Maunga Orito) located at the western end of the island and the Orito source appears to have been the largest and most heavily exploited. Tool quality basalt is known to have come from a source near Vaitea in the center of the island and from a source complex of more than 40 open pit mines immediately to the south and west of La Perouse bay on the north coast. Architectural construction materials such as red scoria and volcanic tuff come from the Puna Pau and Rano Raraku, respectively. However, other large basalt slabs used in *ahu* seawalls may come from extensive outcrops located on Rano Kau and other suitable outcroppings distributed around the island (Stevenson et al. 1997). Decorative materials such as small and large high density beach pebbles (*poro*) may also have had a wide distribution along the shoreline but these stones have been completely removed by prehistoric exploitation and cannot be located today.

Except for the slopes of Poike volcano, virtually all of the soils on Rapa Nui were suitable for dryland agriculture. The agricultural system was dependent upon the annual rainfall which can vary between 1700 mm and 620 mm per year (Diaz-Vial 1949). This precipitation range has been recorded at the coastal weather station at Mataveri on the southwest part of the island. The rain falls mostly during the cooler winter period and declines throughout the summer growing season. A pattern of orographic rainfall occurs at higher elevations (Honorato et al. 1991) and provides greater moisture for the higher locations in the early summer when the coastal region is becoming dryer. During winter periods the upland rains can be heavy and the surface runoff will fill the large natural arroyos that lead to the coast. However, these channels are dry in the summer months and may only have temporary pools of water contained within them. As a result, the low seasonal stream flow would not have supported an irrigation system at near coastal locations.

The soils of Rapa Nui have been characterized as nutrient depleted (Wright and Diaz 1962). The early investigations state that the soils are generally low in phosphorus and nitrogen and have a reduced organic content. Observations show that the soils are excessively drained and that there is a high rate of evaporation in the near surface region. Early soil horizons have not been located and studied, but because of the low density grass cover and savannah-like forest environment proposed to be in place at the time of settlement, we would not expect the original soils to have been radically different from today.

The impact of human activities on island ecosystems can be extensive (Kirch 1982, McGlone 1978) as a result of clearing and burning for swidden agriculture. It is certainly the case that this activity started the process of soil degradation over the long term on Rapa Nui.

Flenley (1993) has reviewed the introduced components of the Polynesian agricultural complex on Rapa Nui flora and indicates that taro (*Colocasia antiquorum*), yam (*Dioscorea alata*), sweet potato (*Ipomoea batatas*), banana (*Musa sapientum*) and sugarcane (*Saccharum officinarum*) were the major starches and sugars. Other economically useful but minor plants included paper mulberry (*Broussonetia papyrifera*), hauhau (*Triumfetta semitriloba*), tumeric (*Curcuma longa*) and gourd (*Lagenaria vulgaris*). Complementary foods included the Polynesian rat and chicken as a valued food that has been identified in faunal assemblages dating to the AD1100s (Martinsson-Wallin and Wallin 1994).

The marine and agricultural food resources would have supported an expanding population. Kirch (1984) has proposed that an approximation of the sigmoidal population growth curve is an appropriate model for many island populations. Populations are initially small but eventually experience a period of sustained and rapid population growth until the carrying capacity of the region is reached. At this point the population either levels off or may experience a reduction. Using the methodological assumption that the population of an area is reflected by the number of simultaneously occupied sites, a population growth curve has been developed for the south central coast area of Rapa Nui (Figure 2). In contrast to previous case studies from the West Hawaiian Island region and Kaho'olawe Island (Kirch 1984) where there is a very steep, almost exponential, increase in population near the mid-point of occupation, the Rapa Nui population growth appears to be nearly linear and reaches the greatest

Population Growth

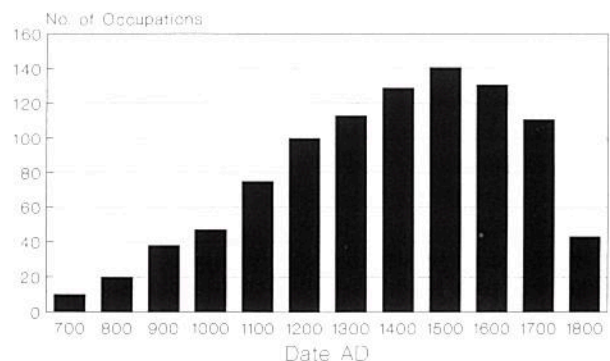


Fig. 2. A population growth curve developed from obsidian dated sites in the Akahanga area (south coast) of Easter Island.

numbers during the AD 1400-1600s before a small decline in the AD 1700s.

In summary, the early settlers of Rapa Nui settled in a highly circumscribed physical environment with a limited floral and marine diversity. In the early centuries after colonization the initial field systems were cleared and the avian and floral diversity were diminished. Within a moisture limited environment, the plants of the Polynesian agricultural complex were successfully grown and resulted in an economy based largely upon dryland taro. If the radiocarbon dating (ca. AD 1000) of the sweet potato introduction to the Marquesas/Society Islands/Cook Islands core area is accurate, periodic interaction with external voyagers resulted in the introduction of this tuber. As a result, dryland farming of tuber crops became the staple commodity of the island population. It was this environmental context that constrained the strategic options for chiefly political control.

Strategies of Chiefly Control

Based upon a characterization of the Rapa Nui environment at the time of settlement and changes in this ecological context, we propose that the elite segment of society selected four strategies to maintain its position:

1) ***Hereditary control over land***: The Rapa Nui economy was based almost exclusively upon the production of several varieties of tubers that was augmented by small quantities of protein from fish, chickens and rat. Therefore, the chiefly ownership of land would have been essential in controlling the means of production. Developing a surplus may have involved a cycle of gift giving and feasting as well as the direct appropriation of resources within the territory of the chiefdom. Such a strategy is dependent upon the strength of descent group ideology and degree of reinforcement.

2) ***Investment in the means of production***: In order to maintain a high and continuous level of agricultural productivity the chiefly segment would have invested in the economic infrastructure. Within the context of moisture limited dryland farming, this may have taken the form of establishing new elite controlled, labor managed field systems, developing and implementing moisture control techniques and introducing more drought resistant plants into the agricultural system.

3) ***Control the internal exchange of non-food resources***: In the absence of regularly accessible external exchange partners, elite personnel could not draw upon outside sources of exotic materials with which to reinforce their status positions. However, many of the chiefdom territories contained resources which were not available in other parts of the island. Direct access to materials such as tuff, scoria, tool quality basalt and obsidian could have been denied to unranked persons. Materials found only in the territory of one chiefdom could have been exchanged for valued materials found only within other territories. The use of local and external materials in the feasting and gift giving process would increase the

imbalance in reciprocity between the chiefs and the unranked population.

4) ***Elaboration of existing religious and status defining symbols***: The minimal interaction of the Rapanui people with outside populations meant that the use of external symbols which legitimized the position of chiefs in other societies were probably not used. It appears reasonable to suppose that the strength of a symbol is in part dependent upon periodic reinforcement where it can be demonstrated to non-elite members of society that the symbols still maintain their sacred or special attributes. Therefore, we propose that the Rapanui elite would have had to create new symbols or elaborate those cultural symbols which were present at the time of initial settlement.

Archaeological Evidence for Chiefly Strategies

In this section we will use the existing archaeological data to develop a preliminary model of how the elite manipulated their environment in order to maintain political authority. Here, we offer some tentative conclusions about past strategies and suggest new research directions that will illustrate more clearly the role of chiefly decision making in Rapa Nui society.

Control of Land

Archaeological correlates, which can be used to confidently infer the elite ownership of land, are not numerous. However, the distribution of elite villages and major temple complexes suggests that chiefly control of land was present. Using the large body of architectural data collected by Martinsson-Wallin (1994), it has been possible to identify the most elaborate and expensive temples around the margins of the island (Figure 3). The

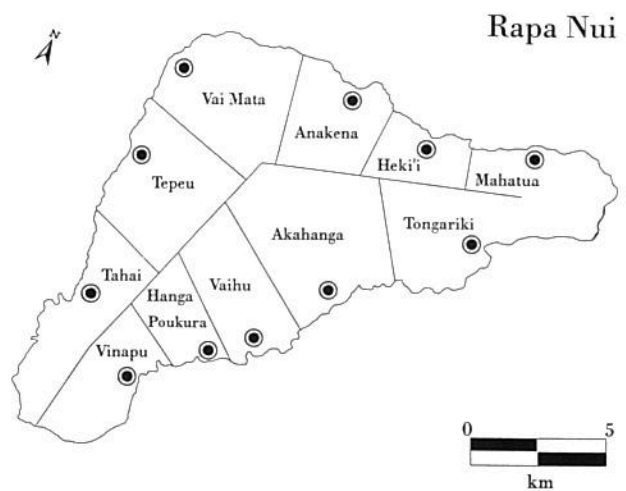


Fig. 3. A model of descent group territories for the 16th century and earlier.

association of these structures with elite “villages”, or clusters of dwellings with fine cut stone foundations (*hare paenga*), suggests that these complexes represent the principal centers of the chiefdom. Their distribution

around the coast indicates that eleven separate descent groups were once present, each with its own section of land and shoreline (Stevenson 1999). In addition to the physical presence of a large temple within each territory, the emphasis on ancestor worship and the placement of the *moai* in a position overlooking the land holdings of the descent group can be seen as a use of symbol to justify and legitimize this hereditary control over land.

Investment in the Means of Production

An economy based upon the tending of dryland taro and sweet potato and supplemented by lesser amounts of protein from marine fauna and domesticated chicken was probably well established by the AD 1200s. However, just what do we know about the various parts of the production system and how might the chiefs have use it to their advantage?

We have just recently learned how to identify the prehistoric gardens and fields (Figure 4) through mapping the surface distributions of lithic mulch which define the spatial limits of agricultural activity on the landscape (Stevenson and Haoa 1998, Stevenson et al. 1999, Wozniak 1998). Our analysis of the surface rock patterns has shown that the landscape was extensively modified through farming. Because of the desiccating winds, virtually every topographic irregularity was used to create a favorable microenvironment and included the edge areas of low basalt outcrops, depressions and hillside swales. Humanly made wind barriers included linear rock walls, garden enclosures (*manavai*) and defunct religious temples (*ahu*). Lithic mulch was added to the landscape to assist in directing rainwater runoff into the soil and to limit moisture loss through evaporation. A comparison of the settlement pattern with the distribution of gardens and fields reveals that much of the food production was conducted at the household level although there is evidence for larger community field systems in the La Perouse and Te Niu areas (Stevenson et al. 1999).

It is unknown at this time how the agricultural system intensified over time. The population growth curve from the southern coast indicates that a need was always present to increase productivity in order to feed a larger number of persons. In a moisture limited and moisture variable environment, it is proposed that the elite would invest in, and manage, the means of production in order to maintain a uniform level of production. This alternative has been proposed to be a chiefly strategy for populations on the leeward side of Hawai'i island by Ladefoged et al. (1996). A similar strategy has also been identified on the north coast of Rapa Nui at La Perouse based upon two criteria: 1) An elite house (*hare paenga*) has been found within the field system and is associated with a small *ahu*, 2) This field system is many times the size of a typical household garden and is more heavily mulched. The presence of a permanent or semi-permanent elite presence suggests that the labor was supervised. Productivity may have been higher and less variable under such circumstances where greater care was taken to conserve

moisture. These occupations have been dated to between AD 1400 and AD 1700 (Stevenson and Haoa 1998).

A variant of this strategy was to move elite managed field systems into a less variable microenvironment found at higher elevations. Here, the same pattern of an elite house, of rectangular form, and associated *ahu* were discovered at Maunga Tari and reflected occupations ranging from the AD 1200s to the AD 1600s. In addition, there are numerous rectangular houses scattered up the southern slopes of Maunga Tari beginning at about the 150 m elevation mark. These houses have been dated to between AD 1200 and AD 1700 (Stevenson 1997).

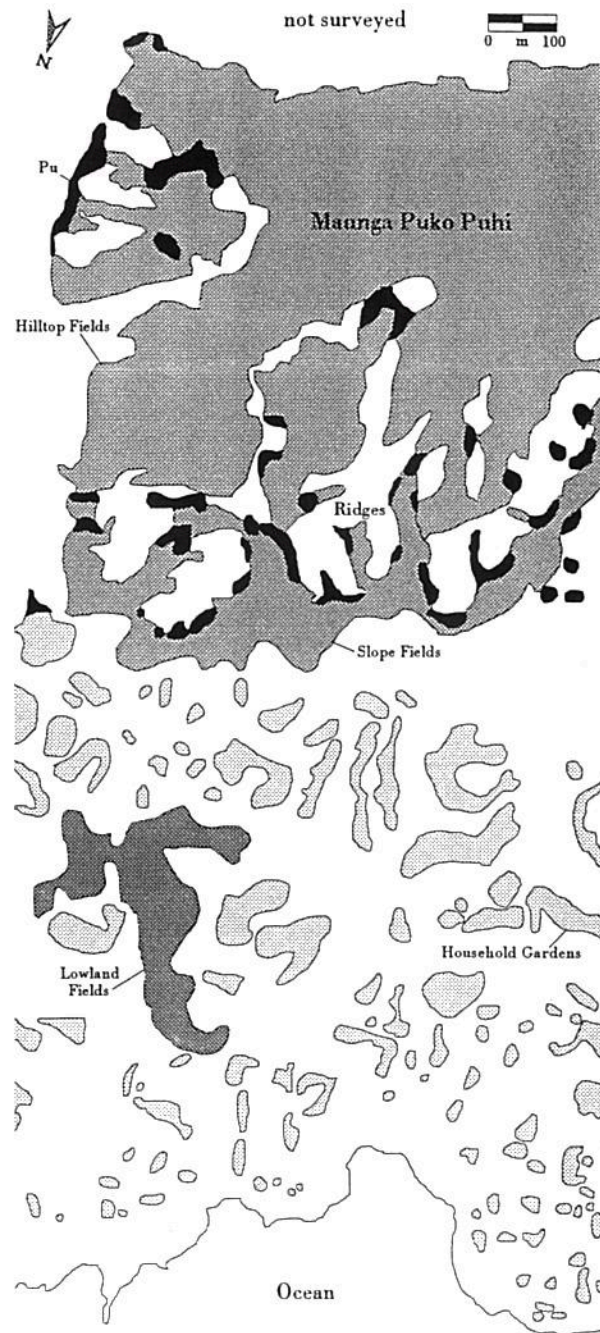


Fig. 4. Prehistoric gardens and field systems identified by the surface distribution of lithic mulch in the La Perouse (north coast) area of Easter Island.

An alternate strategy for the accumulation of surplus and management of food supply variability would have been the development of an extensive and long term storage technology where foods could have been preserved for six months or more. Fermentation pits for breadfruit are known elsewhere in Polynesia and sweet potato storage features are routinely associated with fortified sites (*pa*) in New Zealand. On Rapa Nui no such technology is readily apparent. Numerous pits with stained fill and a single large pit over 2 meters in diameter and over a meter deep was found at a Maunga Tari habitation site (Stevenson 1997) but this is the exception rather than the common occurrence for excavations at habitation sites on Rapa Nui.

Internal Exchange of Non-Food Resources

As noted above, in many ranked societies exotic materials such as jade, feathers, obsidian and shell are acquired through exchange with other elites and serve as markers which reinforce high status. On Rapa Nui, it is proposed that off-island contacts were rare and that exchange partners were not available to supply exotic items. However, the limited occurrence of materials such as tuff, red scoria, obsidian and basalt at point sources contained exclusively within the territory of a descent group may have elevated a normally common item in other contexts to the category of an "exotic". As such, these items may have been exchanged among descent groups and used to legitimize elite activity.

The comparison of resource source locations with chiefdom territories (Stevenson 1999) shows how such resources may have been controlled. Yellow tuff, the material for statues, falls entirely within the Tongariki chiefdom (Figure 1, Figure 3). This was the preferred material for statues for nearly 600 years. Thus, can it really be considered surprising that Tongariki is the largest ceremonial complex on the island? The sources of obsidian found at Mt. Orito, Rano Kau and Motu Iti may have been under the control of the Vinapu chiefdom. Securely heat welded red scoria suitable for *ahu* lintels and *moai* top knots is only available at Puna Pau within the Tahai chiefdom. Large quantities of tool quality basalt is found on the north coast and may have been within the territory of the Heki'i or Anakena chiefdom and a second and finer material is reported in the central area of the island possibly in the Akahanga chiefdom.

The island wide occurrence of all these materials at archaeological sites attests to their wide distribution and a variety of exchange mechanisms may have been used. Yellow tuff and red scoria are incorporated into *ahu* architecture and may have been exchanged amongst elites while less formal interaction may have accompanied the exchange of obsidian and tool quality basalt. To date, no work has been completed which seeks to understand the various mechanisms by which lithic materials became distributed throughout Rapa Nui although Ayres et al. (1998) has proposed several alternative models for the distribution of basalt that include opportunistic

acquisition, kin-based exchange and centralized redistribution.

Elaboration of Status Defining Symbols

In the archaeological record there can be seen a clear trend in the elaboration of insignias of rank as expressed through architecture. This was first noted by Sahlins (1955) who characterized it as "esoteric efflorescence". While many perishable and behavioral indicators of rank differences were undoubtedly present, it is changes in the nature of construction, funded through surplus production, that highlights the greater complexity of the island chiefdoms.

The first architectural indicators of chiefly rank are manifested by the appearance of houses with dressed stone foundations which occur most frequently in front of the larger *ahu* or principal centers. Each of the 15-20 slabs that constitute a structure is hand-pecked to form a dressed rectangular surface along one margin of the stone which may be a meter or more long and weighing several hundred kilos. The stones may have been cut from a basalt outcrop or fashioned from field stone. After dressing, they are buried on edge to form an elliptical foundation that supported a thatch structure. A beach cobble patio completes the front of the structure. This is in contrast to the frequently occurring commoner house that consists solely of a cobble patio and no foundation.

The level of effort required to quarry, dress, move, bury and fit together the foundation is many orders of magnitude greater than the common household and would have required extensive resources to complete. The development of this house form is proposed to have occurred in the AD 1300s (Stevenson 1997) but their frequent reuse and later recycling has made them difficult to age accurately.

A second trend is the elaboration of the *ahu* structures. This is most noticeable in the architecture of the largest structures found at the central places in each chiefdom. At many locations, these central places developed through accretion. A long history of careful excavation and restoration has identified building phases which reflect significant amplification in size of earlier small structures or refinements in architectural detail which reflect a much greater investment of resources. The result of this process has been documented through the obsidian dating of *ahu* on the southern coast. Initial activity in the region is present at AD 900-1000 but construction appears to have begun around AD 1200. By the early AD 1400s the central place areas such as Akahanga, Hanga Poukura and Vaihu are well established and the seawall architecture indicates that multiple construction episodes have occurred at many of the temples.

An example of this island wide trend has been documented in greater detail through the excavations at Anakena (Skjolsvold 1994). At this *ahu*, four major building episodes were recognized. As with the south coast

settlements, the earliest human activity was dated to between AD 800-1000 from a habitation level located beneath the *ahu*. Ahu Nau Nau I was the first monumental architectural construction which consisted of a 1 m high platform with a slightly sloping frontal pavement leading to the edge of a plaza. A radiocarbon date from this structure placed it in the AD 1200s. Although the platform dimensions could not be estimated by trenching the front retaining wall was documented to have both finely worked masonry as well as undressed slabs.

Later in the 13th century, a second platform, Ahu Nau Nau II, was built and used Ahu Nau Nau I as a wing feature on the west side. The new platform was 48-50 m in length, 1 m high and possessed a front retaining wall of well dressed and fitted masonry. Unworked stones formed the seawall and the platform is thought to have supported small statues.

In the AD 1300s, Ahu Nau Nau III was built on top of Ahu Nau Nau II and was a classic image *ahu* with seven statues, top knots, an elevated central platform with a paved frontal ramp of beach cobbles, a crematorium and possibly an eastern wing. Located to the east by a distance of only several meters was the platform of Ahu Nau Nau IV. Although heavily disturbed by post AD 1700 tomb construction the approximately 10 m long platform had well a well dressed front retaining wall and a frontal ramp. Four different building phases were recognized in the architecture and it is likely that the platform is an amplification of Ahu Nau Nau III and was used at the same time. This double platform configuration is seen at other *ahu* such as Ahu Hanga Poukura. An enlargement of the *ahu* platform through the addition of a large scale elevated and paved plaza at Ahu Heki'i has been dated by Martinsson-Wallin (1998) to the period of AD 1500-1600 or slightly after. This activity documents that architectural religious symbols were enlarged until late in the *ahu moai* archaeological phase (pre-AD 1680).

Discussion

At about AD 800 the first Polynesian colonists set foot on Rapa Nui after a long voyage from the Mangareva/Pitcairn/Henderson region. This great distance between island populations meant that inter-island contact was limited and that the founders were socially and physically circumscribed on this small high island. The island possessed an open savannah-like forest with an undergrowth of small trees and grass which was cleared to establish fields. Rainfall was variable and most abundant in the cooler non-growing season. The staple crops of tubers, bananas and sugarcane were successfully established but may have been subject to periods of low productivity as a result of soils that possessed a reduced capacity to hold water.

Over the first few centuries the population grew and dispersed themselves across the landscape around the island. With a growing population and filling in of the island, social interaction and territorial issues became

more of a concern and it is proposed that the concepts of hereditary status and chiefly ownership of land became more important, as did the corporate identity of the descent groups.

By approximately AD 1200-1400, the archaeological record begins to show the strategies selected by the chiefly class to legitimize their social position and method of government. The first evidence of monumental architecture is clearly documented at Anakena and is probably paralleled by similar constructions on the southern coast. These initial *ahu* are placed at sites later destined to become central places within the chiefdom territories, thus, publicly marking the ownership of land for the descent group. At this point, control over the means of production was now symbolized.

The investment in the means of production and intensification of agriculture may not have come until several centuries later. At around AD 1400 there is the development of chiefly managed fields in the coastal lowlands and an intensive use of the higher and moister central portion of the island also with a significant elite managerial presence. This greater agricultural activity is not only a response to the needs of a growing population but the desire of the elite segment to produce surplus food with a high degree of predictability.

This surplus funded the elaboration of status defining symbols which are revealed by the development of the elite house form and larger ideological symbols that included the elaborate *ahu* architecture and the statues that were placed upon them. The exchange of island "exotic" materials such as scoria between elites may have been part of the process.

The scenario that has been outline above prompts the discussion of three issues. First, what was role of the sweet potato on this developmental sequence? Based upon the current chronometric data, it seems unlikely that the sweet potato came with the first settlers or was present for the first several centuries. Is it a coincidence that the first monumental architecture occurs about 400 years after settlement? It is possible that under drier and moisture variable conditions that a strategy of large scale surplus production was not a viable elite strategy, and that only after the arrival of the more drought resistant sweet potato could a consistent surplus be generated?

Secondly, what were the environmental and/or social factors that weakened the ideological system and lowered the level of ideological legitimization. It seems clear that the Rapa Nui population was confronted with the continuous long term problem of growing food within a moisture limited environment. In the face of this problem new innovations such as the lithic mulching of agricultural fields were introduced. The antiquity of this innovation is not known but we can predict that it may have been developed in the AD1200-1300s when a food surplus was needed to fund the program of monumental architecture

construction. The continued need for long term growth in the productivity of the agricultural system, to meet the needs of an expanding population as well as surplus production, led to additional intensification. Elite managed fields were established in both lowland and upland settings.

While deforestation and generalized environmental degradation may have impoverished the island, it appears that high levels of production could still have been sustained using the innovative techniques of water control and moisture conservation. Based upon this, it is hypothesized that a decline in total moisture is the only factor that would effect the productivity of the system in a significant way. An extended drought or increased frequency of dry periods would have lowered production to a level where the traditionally perceived link between economic prosperity and the political/ideological order was undermined and eventually broken. Such a scenario may have been brought on by the changing climatic conditions of the Little Ice Age (McCall 1993, Hunter-Anderson 1998).

Once economic prosperity declined and the productive capacity to produce a surplus had been curtailed, the strategies which legitimized chiefly authority could not be successfully conducted. Further attempts at agricultural innovation and intensification, which would address the problem of limited moisture, were not developed. Nor is it likely that a suitable innovation could have been developed given the limiting factors in the environment. The monumental corporate work efforts were no longer continued and the distribution of essential *ahu* building materials of tuff and scoria ended. This decline in legitimacy was accompanied by a loss of faith in the belief system. Thus, the ritual mechanisms through which chiefs distributed materials to maintain their loyal following broke down. This loss of chiefly sacredness also weakened the claim to the hereditary ownership of land.

As one form of political organization declined a new and more fluid social organization or "open" society (Goldman 1970) arose to take its place. Declining chiefly authority was augmented by the emergence of a warrior chief whose status within society was based upon his achievements in the political and warfare arenas. A new cosmology with a creator deity replaced ancestor worship and the adoption of cults related to fertility and the Birdman emerged. The archaeological record shows that subsistence practices reverted exclusively to the household level of production. With the decline in chiefly rights to land ownership, it is likely that warfare was initiated to rearrange the population with respect to the distribution of resources. This course of events is similar to the islands of Mangaia and the Marquesas, where conditions of high population density in an over-intensified and degraded environment led to a pattern of extreme competition (Friedman 1982). Had not the introduction of European diseases decimated the population even further, we might have seen in greater detail the outcome of the largest social restructuring in

Rapa Nui prehistory.

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The Rapa Nui Project: A Centre for Local Traditions

Sonia Haoa¹

The Problem

The problem on Easter Island is twofold. First, scientific studies about the island have exclusively focused on the historical remains of a culture that was considered to be extinct. As a result, the bulk of intellectual knowledge and even material evidence is to be found outside the island beyond reach of the islanders themselves. No institution whatsoever had any interest in the survival of this culture and those islanders who had the opportunity to continue their education on the continent seldom came back to the island.

The local islanders are left with poor possibilities to build a Polynesian identity and, due to the geographical isolation of the island, poor possibilities to integrate into a new identity. The dominant feeling is one of ethnic inferiority and a total lack of self-esteem.

Second, international tourism has discovered Easter Island confronting the local people with all the temptations of the west. Unemployment among the younger generation is by that becoming a source of frustration, for the economic opportunities offered by tourism are mostly taken by mid-life traders who are overrunning the island with western consumer goods and...genuine pascuan gadgets (imported from Tahiti!). This easy money economy is perhaps a material good but it has deteriorating effects on the environmental health of the island and the mental health of the islanders. Alcoholism, drug-taking, hooliganism are dramatically increasing.

The answer

To reverse this alarming situation, FIDPEI (Fundacion Isla de Pascua-Easter Island) has taken the initiative to create a Centre for Local Traditions.

The Centre for Local Traditions will stimulate the survival of the traditional Polynesian culture and prepare the local people to take full advantage of their cultural inheritance.

The knowledge of the past will only be the starting point for an inspiring attitude towards their own culture that will make the centre a lively institution, different from a museum, adapted to the actual expectations and needs.

The centre will record, re-vitalize and promote the use of traditional skills building, gardening, fishing, cooking, dancing, clothing and ornament, tattooing. While traditional rituals and ceremonies will be studied for their cultural value and not only as tourist attractions. All this without the objective of mere imitation but as a creative process starting from the old knowledge and leading to an integration in the everyday live.

Respect for the environment and looking for self supporting possibilities are on top of the objectives.

Starting activities will include the recording of the oral history provided by the old people on the island; the instruction of young people about local history, culture, language and skills; the housing of specialists in archaeology, agriculture, sculpture, tattooing offering them opportunity to transfer their knowledge; temporary exhibitions on subjects of local interest.

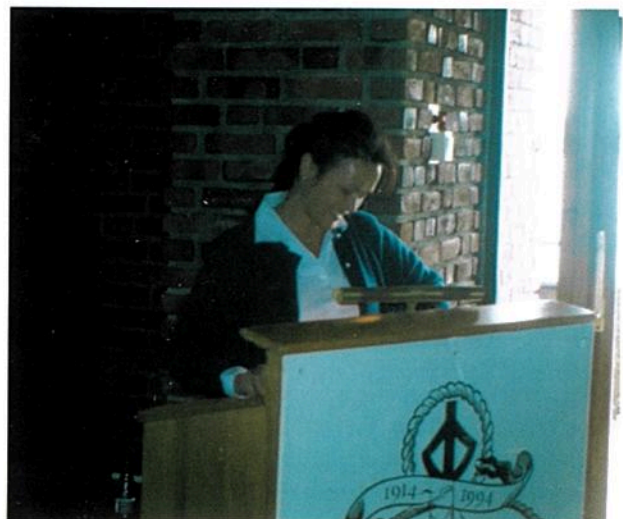
The centre will be directed a board composed of local authorities and associations (the Governor of Rapa Nui, the Fundacion Isla de Pascua, the Consejo de Ancianos) and a representative the Museum of Santiago. The project has the support of several museums and institutions all over the world.

All this calls for an adequate housing

The existing Anthropological Museum is offering a very suitable building site next to their location. This site offers good building conditions, makes collaboration with the museum more practical, take profit of tourists visiting the museum, neighbours important archaeological sites and provides good gardening possibilities.

The architects of the important Rapa Nui exhibition in Brussels, (Belgium) in 1990 have already agreed to develop a building concept that will consider a highly integrated landscaping and the adjusted re-use of old building techniques.

Efforts will be made to involve local people in the actual construction so that they feel participants to the project and not just merely paid workers.



Sonia Haoa at the No Barriers seminar, April 1999

¹ Fundacion Isla de Pascua, Easter Island

The Importance of Cross-Disciplinary Collaboration in the Reconstruction of the Human Past - With Focus on Ethnobotany

Thor Heyerdahl¹

The need of specialization became obvious and forced itself upon all branches of science as we entered the 20th century. However, as we approach its end it becomes ever more obvious that isolation between the various faculties of science is a blind end that brings us nowhere. As the specialists in various fields penetrate ever deeper, they have lost the general overview. Today we need links with specialists in other fields through co-ordinators, who are academically trained to sit on the surface and piece together the fragments that come up from the depth into broader units of attempted reconstruction.

When invited to speak on cross-disciplinary collaboration in reconstruction of the human past, I chose to focus on my own life-long attempts at primarily linking anthropology to biology, and secondarily these two disciplines to geography and other relevant sciences. I owe much to my own training in zoology by Professor Kristine Bonnevie at the University of Oslo back in 1933-37 for realizing already as a student that any sharp demarkation line from biology to physical anthropology was entirely arbitrary. Prof. Bonnevie was an ardent Darwinist and evolutionist, and ignored any artificial separation between animals and man. In the corridor of the Laboratory of Zoology, a skeleton of an upright *Homo sapiens*, nicknamed by the students as Mr. Olsen, was lined up in an exhibit of other vertebrates from reptiles up to apes. Mendel's law of inheritance, blood-groups, cranial indices and Latin names for the various skull-bones and long-bones were as obligatory for the zoologists as for the anthropologists. And, as a study of animal and plant migration to the truly oceanic islands in the East Pacific was decided upon from my very entry into the Faculty of Zoology, it became a clear necessity to include geography as a secondary study. It was a fundamental necessity to understand the movements of the ocean and the air, since plants and terrestrial animals are infinitely more dependant on aids in ocean transport than man.

A student of geography learns what students of anthropology seem to overlook or ignore: That the distance measured in dead mileage from Southeast Asia to South America is not longer by way of the Aleutian Islands along what seems to be a curve around the North Pacific rim, than by way of Melanesia and Polynesia, along what seems to follow the straight equatorial line. The Pacific Ocean bends across half the surface of Planet Earth, the Pacific coasts of south-east Asia and South America are antipodes, and a straight line at the latitude of the equator would go through the center of the earth.

In the university course of logics, we learn the basic rule that the distance from A to B is the same as the distance from B to A. In geography we learn that this is only true on a map of dry land, and on the bottom of the ocean, but not on the surface of mobile water, like the

ocean and running rivers. If we measure the mileage of mobile water to cross, Polynesia is far away for the Melanesians, but Melanesia is very close for the Polynesians, since these two neighbouring branches of mankind have to cross very different mileages of ocean surface to communicate.

The fundamental importance of including a basic training in geography for any student intending to get involved in research of human movements in an open ocean did not appear to me until my own experiment with aboriginal watercraft in the East Pacific in 1947. A simple example from our own imperic experiment may serve to illustrate the need of including the geographical factor in Polynesian anthropology.

The dead distance separating Peru from the Tuamotu Islands is approximately 4000 miles. Yet, after crossing only about 1000 miles of surface water, the Kon-Tiki raft actually reached the Tuamotu Island from Peru. If another primitive craft had been able to travel with the same speed and in an equally straight line, but in the opposite direction, it would have had to traverse about 7000 miles of surface water to reach Peru from the Tuamotus. The reason is that the ocean surface itself was displaced about 3000 miles, or about 50 degrees of the earth's circumference, during the time needed for the crossing. This means that, in travelling distance, the Tuamotu Islands are located only about 1000 miles from Peru, whereas Peru is located 7000 miles from the Tuamotu Islands once a voyager proceeds into the ocean with a travelling speed equal to that of Kon-Tiki.

Similarly, the dead distance between Peru and the Marquesas Group is approximately 4000 miles, and the average set of the local current is about 40 miles a day. This means that, if an aboriginal craft is propelled westwards with a surface speed of 60 miles a day, it will actually make 60 plus 40 equals 100 miles a day, and complete the voyage from Peru to the Marquesas in 40 days. Travelling the opposite way in a straight line and with the same speed it will advance 60 minus 40 equals 20 miles a day, and thus needs 200 days to get from the Marquesas to Peru. If, however, the craft can only make 40 miles a day, it will move west with a speed of 40 plus 40 equals 80 miles a day, and still reach the Marquesas after only 50 days, but if it aims in the opposite direction it will make 40 minus 40 equals 0 miles a day, and never even get away from the Marquesas Islands.

The presence in Oslo of the Kroepelien Polynesian Library made it possible already in the 1930's - long before the availability of modern telecommunications - to embrace a wide variety of research results in Polynesia until then. This library, now incorporated in the Kon-Tiki Museum Research Department, contained virtually all past and contemporary literature on Polynesia, from the records of the early voyagers to the results of the first blood-group studies and the introduction of stratigraphic archaeology in the marginal territory of Samoa and Tonga.

A survey of all existing theories on Polynesian origins made the need for cross-disciplinary collaboration abundantly clear already then. A preliminary attempt at joining available information from different geographical

¹ The Kon-Tiki Museum, Oslo

areas and disciplinary fields was published by the speaker in the first issue of *International Science*, New York 1941, under the controversial title «Did Polynesian culture originate in America» (Heyerdahl 1941). In 1952 the same question was brought up again with quotes from more than 1000 published sources and with emphasis on Peru and the Northwest American coast archipelago, but with this archipelago as merely a geographical stepping-stone from Southeast Asia into the open East Pacific. A review of all theories advanced by investigators until then, revealed that, of a total of more than 30 proposals advanced from scholars within different faculties, not two agreed on the same source and migration route for the ancestors of the Polynesian tribes. The only opinion shared by all, was that Polynesia had been reached more than once, and independently by people of different physical type and culture. And it was an unanimous opinion that America could be excluded from consideration by students of Polynesia, as no aboriginal Americans had seaworthy watercraft (Heyerdahl 1952).

It was the combining of lessons from biology and geography with those of history and anthropology that gave me the conviction that the negative opinion on balsa rafts was based on dogma and not on facts. It was a genetic fact that two varieties of domestic dogs and several species of cultivated plants unknown in the West Pacific had reached Polynesia in pre-European times although they were genetically known to be of American origin and unable to cross an ocean without human aid. Historic sources showed that balsa rafts were the only ocean-going craft in South America on European arrival, and archaeologists confirmed that no form of watertight ship had ever been found through excavations or depicted in the rich pre-Columbian art of ancient Peru. For a geneticist also familiar with the global curvatures and movements of the natural environment, there was only one logical conclusion to draw: The balsa raft had to be sea-worthy. And a practical experiment proved this conclusion right.

It was the ethnobotanical data already available in 1947 that gave me the impulse and the courage to sail from Peru to Polynesia on a balsa raft, a project subsequently repeated by more than a dozen other balsa-rafts. The cross-disciplinary survey of the Polynesian triangle presented genetic evidence to the fact that the cultivated plants, and in fact also the domesticated animals, proved pre-European contact both with the Melanesian island territory to the west and the South American continent to the east. The Melanesian elements were easy to account for as due to unavoidable marginal contact. Thus the Melanesian pig and chicken did not spread into nuclear Polynesia until the Maori and Morori of New Zealand and the Chatham Islands had isolated themselves from all contact with the other islands. This is the only explanation why such extremely important culture elements as the Melanesian single ontrigger, the pig and the chicken were unknown, and did not even have a name, when this long isolated corner of Polynesia was discovered by Europeans. In contrast, the two distinct breeds of Polynesian dogs, represented respectively by the historically known *Canis Maori* and the much smaller

breed known archaeologically from the Marquesas, could not have come from Melanesia but very well from Peru, where they share their main features with two of the three distinct breeds of Peruvian dogs: the *Canis Ingae pecuarius* and the *Canis Ingae vertagus* first described by Reiss and Stübel (1880).

The study of Darling (1920) and Soper (1927) of hookworm distribution indicated already at that early time what modern mitochondrial studies have clearly confirmed, by arguing a direct transfer of aboriginal voyagers from Southwest Asia to America in temperate latitudes south of the Bering Strait but north of Polynesia:

Ancylostoma duodenale and *Necator americanus* reached the American aboriginals directly from Asia by way of the Japan Current, and *Necator americanus* was the only hookworm that subsequently reached Polynesia from the east.

Ethnobotany has so far greatly exceeded ethnozoology in discussions on Polynesian contacts and migrations. The farther of ethnobotany was undoubtedly Alphonso de Candolle in his pioneering work *Origin of Cultivated Plants* (1884). His statement that «I have noticed no trace of communication between the peoples of the old and new worlds before the discovery of America by Columbus» was half a century later used by E.D. Merrill as a proof against contact. He argued: «As agriculture in America was autochthonous, we may assume that so were the cultures based upon it» (Merrill 1937).

Merrill's conclusions influenced contemporary anthropology and was fundamental in building up the one-sided isolationist attitude that through most of the 20th century has dominated American anthropology. Few noticed the contrary evidence that was subsequently amassed by botanists and plant geographers who challenged Merrill's unfounded statements, such as O.F. Cook, F.B.H. Brown, C.O. Sauer, G.F. Carter, J.B. Hutchinson, R.A. Silow, S.G. Stephens, C.R. Stonor, E. Andersson and others, all of whom produced historic and/or genetic evidence showing that cultivated plant species had been carried out of America, and some also into America, by voyagers in pre-Columbian times.

The validity of Merrill's negative reasoning depended on the absolute absence of cultivated plants of common origins in the two hemispheres. A single plant that made exception to the basic claim on which he founded his conclusion would make his argument invalid. It was, so to say, necessary to keep the barrel watertight. The loss of a single stave would render it unserviceable and turn the negative reasoning into a valid argument against isolation.

In 1946, a year before the launching of the Kon-Tiki balsa raft, Merrill personally tore the first stave from his barrel. His personal studies of some evidence presented by R.B. Dixon and others forced him to admit that aboriginal navigators had at least crossed the open ocean stretch from the New World to Polynesia. He admitted that the sweet potato was a valid argument for overseas contact by aboriginal watercraft.

The next year he actually wrote that: «It would be foolish to assert that there were no communication across

Taro Irrigation, Arboriculture and Stratified Polities in Coastal Melanesia: Evidence from the Pre-Colonial Agricultural Systems of New Georgia¹

Edvard Hviding*

Introduction

While this seminar leans towards the Polynesian islands of what has been called "remote Oceania" (Green 1991) – indeed "very remote" Oceania – and the challenges those farflung archipelagoes pose to research in regional cultural history, I shall make a move westwards to the larger, more contiguous lands of Melanesia, more specifically to the New Georgia Group in the Solomon Islands (Figures 1, 2). These western parts of the Solomons archipelago consist typically of mountainous, rainforested volcanic cores rimmed by extensive coral reefs and mangroves and connected by some of the largest lagoons of the tropical



Fig. 1. Map of the Western Pacific.

world (Figure 3). This is a resource-rich region in both marine and terrestrial terms.

The New Georgia islands present a considerable knowledge gap in the prehistory of the Pacific, concerning important themes such as Austronesian and non-Austronesian population movements and settlement histories (including "Lapita"-related issues), agricultural intensification, and regional exchange systems (e.g., Kirch 1991, 1997; Reeve 1989; Spriggs 1982, 1997).² This knowledge gap also pertains to late pre-colonial and

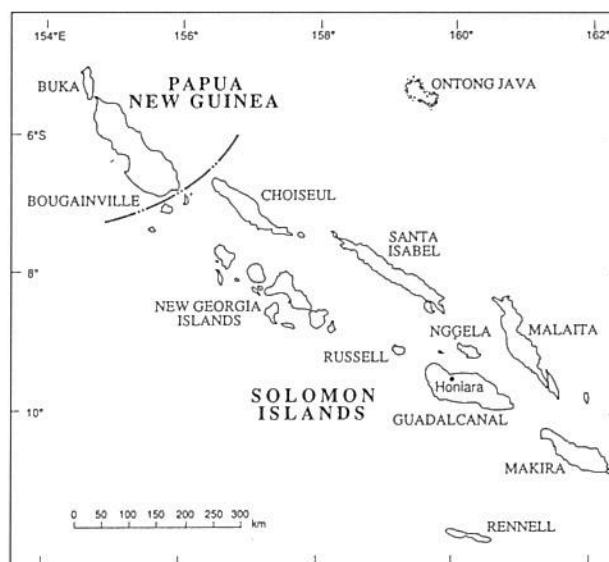


Fig. 2. Map of Solomon Islands.

incipiently colonial times, which are the empirical focus of the present paper. The islands form a geographically compact, yet historically complex region of much linguistic diversity: 15 languages are spoken among its peoples. 12 of these belong to the "Malayo-Polynesian" group of Austronesian languages, containing considerable vocabularies of words nominally recognisable in localities as far apart as Madagascar, Island Southeast Asia and Polynesia. The remaining three "non-Austronesian" languages of the New Georgia Group are totally unrelated to the former, yet are spoken by people who are culturally not altogether dissimilar from the Austronesian speakers. This diversity of languages relates to the considerable length of human occupation in the Group (at least 30,000 years), to a complex history of population movements (this area was a significant focus of Austronesian Lapita expansion from the Bismarcks [cf. Kirch 1997], and these seafarers with their cargo of agricultural innovation encountered long-resident land-oriented populations practising some degree of tree domestication), as well as to a general historical pattern of sociocultural interaction rather than isolation.

For the past 15 years I have been deeply involved in anthropological, linguistic and historical fieldwork in the Marovo Lagoon area of southeastern New Georgia, with a certain emphasis on maritime practice (see, e.g., Hviding 1996). This brief paper presents some findings and arguments treated at length in a new book co-authored with a Melanesianist colleague in human geography (Hviding and Bayliss-Smith 2000). In it we trace the long-term trajectories of the Marovo Lagoon people's uses of the tropical rainforest and of non-Marovo people's interest in these forests over the years: from what we would call "agroforestry" in many forms, via the inscription of the rainforest with cultural texts such as ancient megalithic structures and more recent skull shrines representing a genealogical memory of some 3-400 years, to present-day logging by greedy transnational companies mostly of Asian origin, and countermoves to logging by foreign conservationists.

¹ Footnotes, see end of paper

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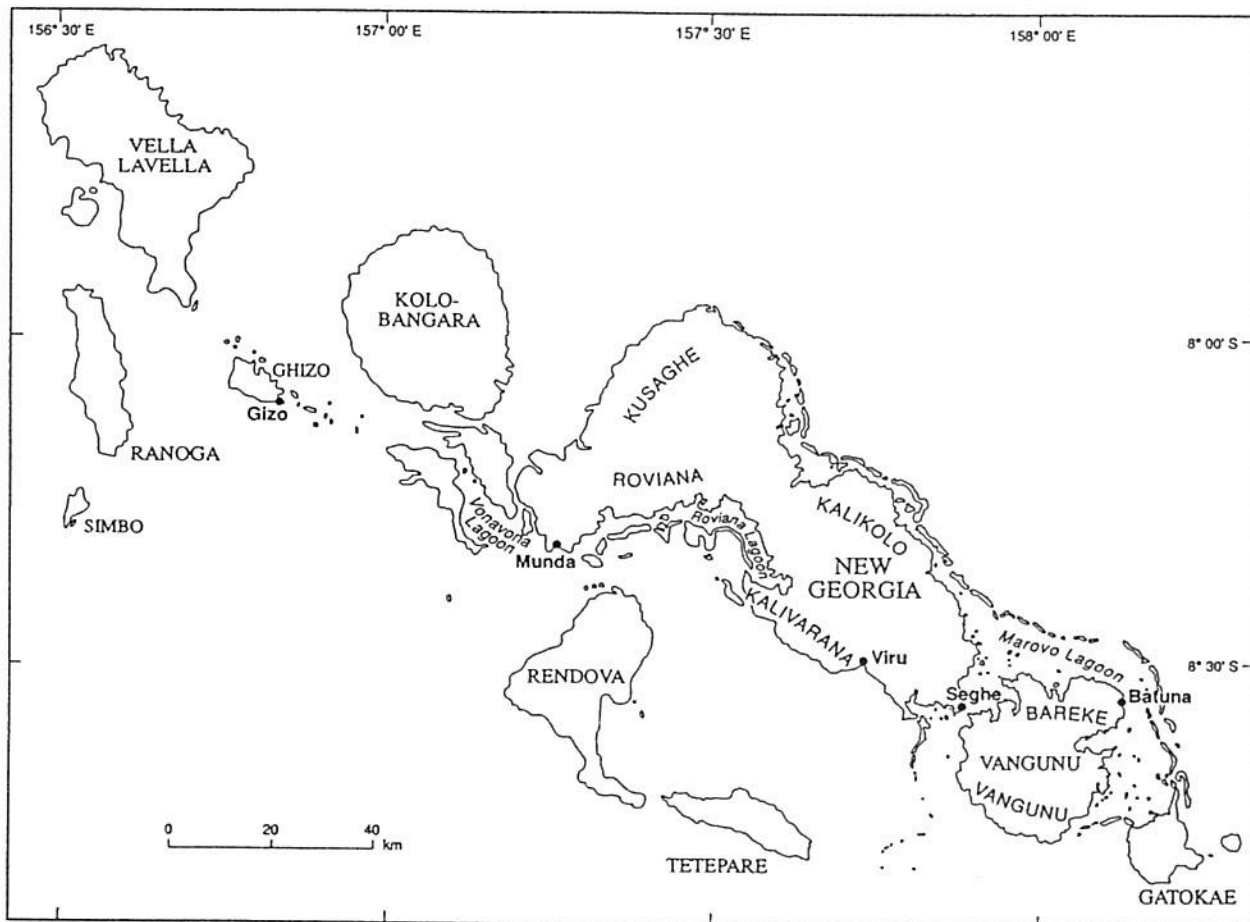


Fig. 3. Map of the New Georgia Islands.

In this paper I simply provide elements of a reconstruction of the agricultural production systems of "old Marovo", with a focus on three interrelated themes of comparative interest in research on Oceania:

- (1) the large-scale irrigated cultivation of *Colocasia taro*;
- (2) the important role of certain tree crops, notably the *Canarium* "almonds";
- (3) the development of expansionist political systems – ranked chiefdoms of a certain kind – based on the control of food production surplus, high degrees of stratification on intra- and inter-group levels, and the control of *mana* (flows of spiritual efficacy) partly through predatory headhunting in overseas locations.

Now, the topics of large-scale taro irrigation and stratified polities do not sound like stereotypical "Melanesia" in received regional terms, and superficially may echo vintage studies of Polynesian social formations (e.g., Sahlins 1958). This brief descriptive account should be seen as a contribution towards the dissolution of obsolete regional dichotomies wherein certain "traits" are seen to be Melanesian and others Polynesian, and as a plea for wider comparative research ranging across Oceania (and further afield in the Austronesian world) with a measure of disregard for the inherently fragile, stereotyped "ethnological" regions of Melanesia, Polynesia and Micronesia.

In today's New Georgia it is as if many features of the

Lapita culture of 3-3,500 years ago (Kirch 1997) – seafaring, reliance on marine resources, sophisticated agriculture, seaside stilt villages (many on offshore islets) – coexist with features of the pre-Lapita populations such as what Les Groube (1989) has termed (for New Guinea) "Pleistocene rainforest management" through arboriculture (Figure 4). Present-day villagers of Marovo Lagoon engage with modernity on many levels, yet rather effortlessly integrate *mana* and ancestral skulls with Protestant Christianity. Life in Marovo builds on a history characterised by widespread Oceanic patterns of economic (and symbolic) land-sea interactions and of social stratification in kinship-based societies. On the most fundamental level, the people of Marovo Lagoon remain classified as either "of the bush" or "of the coast", reflecting unbroken continuity in central cultural themes of ranked interdependence.



Fig. 4. Chea village (1987), a typical settlement of the Marovo Lagoon. Note the low hills with stands of *Canarium* nut trees.

Sea and land in New Georgia

For New Georgia it is a notable fact that the sea and its offerings figure strongly in everyday life, to a degree not normally considered typical of Melanesia (Hviding 1996). Indeed the lagoon peoples of the Solomons probably utilise more marine species – fish and shellfish – than any other population in the Pacific. For the Marovo people, the sea and the land are interrelated conceptually, historically and practically, and the seashore remains a zone of material and symbolic confluence and a scene for intercultural encounters, then as now. A basic scheme of important Marovo classifications could be rendered like this:

LAND : SEA
BUSH PEOPLE : COASTAL PEOPLE
TARO : FISH
(STAPLE) FOOD : THAT WHICH MUST BE EATEN
WITH FOOD
HOME : ABROAD

This foundational scheme of land-sea interactions embodies important element of rank: the land ranks below the sea because the latter conveys from abroad the sources of *mana*-isation; coastal people of old Marovo ranked above bush people because they dealt with the wider world through warfare and the control of large-scale trading systems; chiefs of the bush ranked below coastal chiefs because the latter controlled expansionist warlike (non-agricultural) polities and exacted tribute (in taro and labour) from the former. In New Georgia the all-important traditional crop, *Colocasia* taro, thus has been and is “from the land” (it is probably indigenous in Melanesia although special cultivars must have been brought in Lapita times) – unlike, for example, in the atolls of Micronesia (such as present-day Kiribati) where *Alocasia* taro is “of the sea” and is grown in (brackish) water (S. Roalkvam, pers. comm.).

The distinction between “bush people” and “coastal people” represents a wider pattern in the Solomons (and elsewhere in Melanesia) whereby neighbouring peoples are differentiated according to group histories (land- or sea-oriented), territorial holdings (land- or sea-dominated) and predominant economic practice (agriculture or fishing). Often, as in the Marovo Lagoon, the distinction is marked by linguistic contrast too – while the “coastal” groups of Marovo share a language also referred to as “Marovo”, the “bush” groups of the area speak four different, but closely related (also to “Marovo”) Austronesian languages. It is a striking fact that the distinction between “bush” and “coastal” people persists in today’s Marovo despite intermarriage and settlement changes that since the early 20th century has seen all villages relocated to the shores of lagoon and weather coasts. Some 11,000 people live around the Marovo Lagoon today, in more than fifty large and small villages, all coastal. Economic production is household-based, and agriculture and fishing as well as hunting and gathering in rainforest and on reefs is carried out by virtually everyone. Nevertheless, territorial holdings – tenured as ancestral estate on the level of cognatic descent group

(*butubutu*) – are either predominantly marine or terrestrial: the coastal *butubutu* control the lagoon, the barrier reef and smaller sections of mainland shoreline, whereas the bush *butubutu* control vast tracts of rainforested slopes, valleys and mountains, as well as rivers, of the major islands. Both categories of groups enjoy considerable use right privileges in the territories of the other, according to arrangements established when precolonial upheavals, colonial pacification and, finally, the end of headhunting caused the bush people to move down to settle on the coasts.

For more detailed information on these remarkable historical transformations I refer to my earlier work (Hviding 1996) and to the forthcoming book on the history of rainforest usages around the Marovo Lagoon (Hviding and Bayliss-Smith 2000). Let me briefly note that the fundamental Marovo relationship between the material and symbolic worlds of land and sea, of taro and fish, has its own history. In an important sense these dimensions of classification developed from pre-colonial economic and political “dialogues” between the large-scale, “*intra*-Marovo” cultivation (by bush people) of taro in irrigated pondfields and the firmly *extralocal* pursuit (by coastal people) of powers, objects, persons (and heads) from overseas. In the following I simply wish to sketch the complexities of Marovo (and wider New Georgian) history through a rather narrow focus, emphasising the role of taro irrigation and other forms of cultivation, and thus contributing towards filling some gaps in the anthropological and historical record of this little-known part of Oceania where, moreover, almost no-one lives in the bush today.

Elements of an agricultural history: “in the bush” of old Marovo

The coastal groups of old Marovo carried out fishing and some modest coastal cultivation of tree and root crops, but were above all involved in maintaining regular contact, through warfare, headhunting raids and exchange, with a majority of the main islands of the Solomons, as far as Malaita to the east and Bougainville to the west (Hviding 1996; cf. Findlay 1877:773). These networks had a spatial and cultural scale far exceeding the famous *kula* systems around the Milne Bay area of New Guinea, and allowed for wide regional flows of objects and ideas.

Meanwhile the lives of the bush people up in the sloping hills, wide river valleys and mountain craters of New Georgia, Vangunu and Gatokae focused on day-to-day agricultural work; most importantly the continuous irrigated cultivation of *Colocasia* taro in stone-walled, terraced pondfield systems called *ruta*. In addition considerable dryland (“swidden”) cultivation of yams took place. Special “great gardens” (both dryland and irrigated) were worked communally and produced huge crops likely destined for regional feasting as well as ceremonial exchange with, and tribute exacted by, coastal groups. It is interesting to note that the languages of Marovo have a specific term for 10,000 – *vuro* (distinct from “thousand”, *tina*) – which, according to old people, was reserved mainly for counting massive amounts of taro for

ceremonial occasions. The *vuro* term indeed signifies the scale of ceremonial and agricultural activities of old Marovo. There is every reason to believe that the *ruta* of old Marovo produced huge crop surpluses: for Oceanic production systems in general, Kirch (1994:92-93) has estimated that the expected yield (tons/hectare/year) from irrigated taro is four times greater than that of dryland taro – and eight times greater than that of yams.

The elders of Marovo who contributed information towards this attempt at reconstructing life in former times commented that the bush people, although normally settled in quite large villages, would regularly spread out in family groups for longer stays in hamlets connected to major taro pondfields. These pondfield hamlets were associated also with long-cultivated groves of the nut trees *Canarium indicum* and *Canarium salomonense*, and overall the *ruta* complexes were rather integral to the forest and quite difficult to locate for those not at home in the deep bush (such as coastal marauders). On the large settlement sites in the forest a complex of residential buildings, ceremonial grounds, cooking sites and surrounding agricultural areas was centred on one large main hall called *erovo* (translatable as “war canoe house” from the otherwise predominantly coastal location of such halls) which housed a chief, his leadership associates and warriors and the families of these men. These were also the sites at which invited gatherings of warriors from other parts of New Georgia took place, involving large food prestation ceremonies and a temporary suspension of warfare (though not without risk of treachery, as oral history indicates). Some of the larger inland settlements, especially those on steep ridges immediately above the lagoon coast, were actually those of raiding coastal groups whose men devoted little time to taro cultivation; for the supply of taro for feasts they depended on regularised exchange with nearby bush groups, whose women they often also married.

The “normal” state of enmity between the bush people and coastal people of old Marovo had, as we see, several types of institutionalised suspension. On a day-to-day basis, huge regional feasts and forced tribute aside, the interdependence of these groups was played out in regular instances of “beach barter” where representatives of adjacent “bush” and “coast” groups met in dedicated coastal locations; the women of each side bringing forth and bartering the fruits of forest and sea, respectively, while the armed men stood watch in the background. This “taro-fish” exchange evokes a picture of general relevance for much of Melanesia.

Reading the past: taro pondfields, arboriculture and some surprises

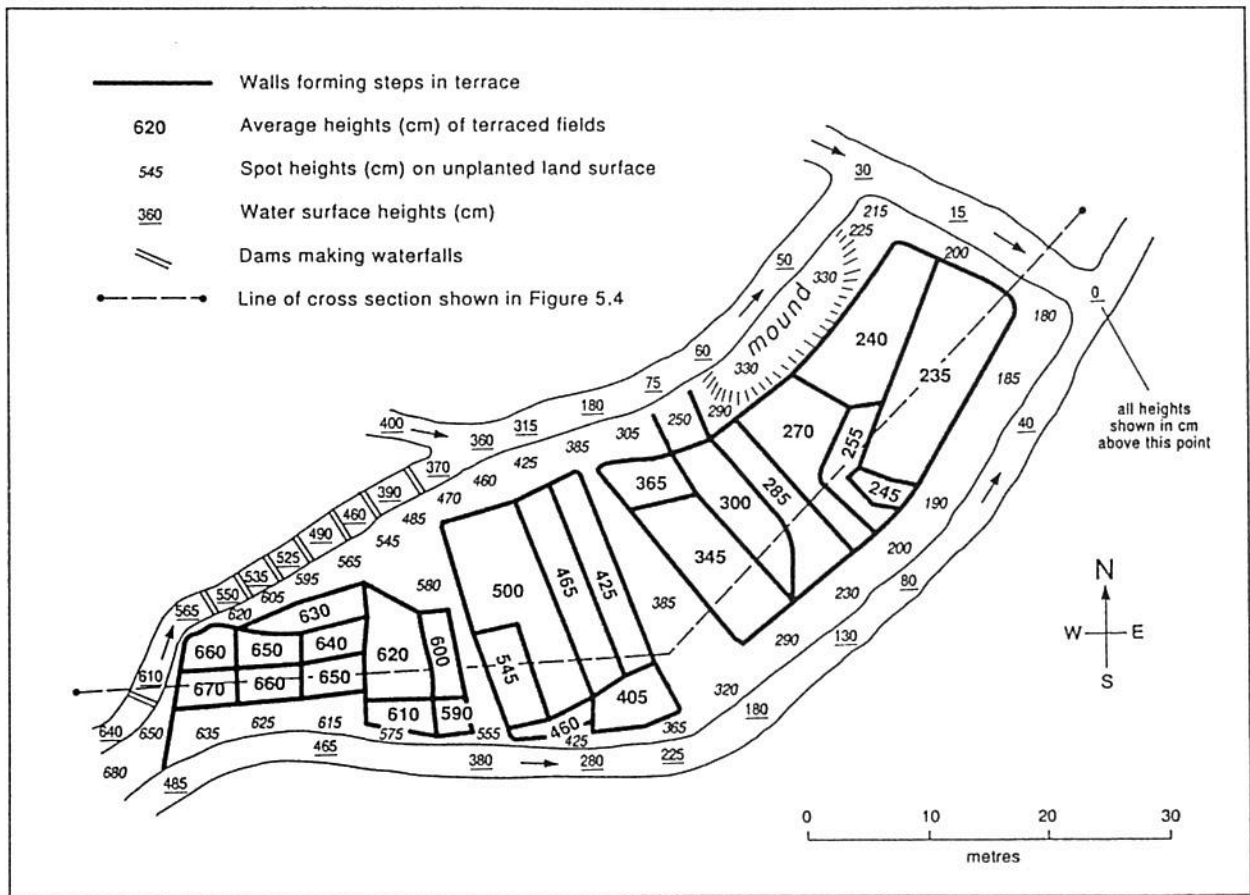
Oral traditions and linguistic material confirm the very special place of *Colocasia* taro in old Marovo. In the languages of the area there are distinct sets of terms relating to taro cultivation, different from the vocabulary referring to other food crops. Myths and tales of the past abound with references to the cultivation, harvesting and consumption of taro as a staple, either roasted or mixed with *Canarium* nuts in the many types of mundane and

ceremonial puddings. In oral traditions taro figures as obtained on a daily basis by women from small swidden gardens; as harvested in a more organised way by both men and women as a pondfield-grown mainstay of beach barter; and as ceremonial food for the large feasts managed by chiefs, in these instances being bartered or drawn as tribute from the bush people or, alternatively, harvested communally by the bush people themselves for their own feasts. The role of male and female slaves must also be mentioned: coastal people used to extract forced labour (for swidden agriculture and for the manufacture of shell valuables) from captives taken on overseas raids, and from bush groups of Marovo recruited as part of the tribute system. There are few indications that the bush people themselves used slaves or otherwise forced labour in the cultivation of *ruta* – beyond the clear element of coercion embodied by the pan-Marovo hierarchical distinction between hereditary chiefs (*bangara*, as well as *palabatu*, “chief’s associates”) and their commoners or “servants” (*ngicha*). Thus *ruta* pondfields, apparently never worked by coastal people, seems to have involved above all the relatively egalitarian group-wise participation of men and women – although the construction of large terraced pondfield systems (Figure 5) must have required intensive work organisation and the far-ranging exercise of leadership beyond the local community.

Evidence from oral traditions and language is supplemented, sometimes in unexpected ways, by the accounts of early European visitors to the New Georgia islands. At Roviana Lagoon (west of Marovo) in February 1844, the Scottish trading captain Andrew Cheyne obtained “cocoanuts, bananas and breadfruit in abundance; also a few yams and sweet potatoes” (Cheyne 1971:306) in return for steel axes, which were an important new item in warfare and for quickening the pace of canoe building. Cheyne’s reference to sweet potatoes seems to be good evidence for a very early date for the introduction of this crop – conventionally not thought to have been present in the Solomons before intensified 19th-century contact (Yen 1974) – to New Georgia. In this case it may have been obtained by the Roviana people from partners at Simbo, a regular port-of-call for European ships since the 1820s; or, the sweet potato may simply have arrived in New Georgia (like so many other objects and ideas) from the Bismarck archipelago to the northwest via Austronesian communities along the coast of Bougainville, as a pre-European introduction. The latter is not farfetched, considering the known importance of the sweet potato in the New Guinea highlands already by 1600 (e.g., Golson 1981). Apparently, taro was not offered to Cheyne by the New Georgians. The reason was probably that his contacts were coastal people who were themselves dependent on obtaining taro from bush people.

At the time when European contacts were becoming more regular, by ca. 1840, the “agroforestry” complex of the Marovo Lagoon area consisted of four interrelated components:

- (1) irrigated taro pondfield systems (*ruta*) under



- perennial cultivation in mature secondary forest; closely associated with
- (2) groves of *Canarium* nuts of two species (*C. indicum* and the endemic *C. salomonense*);
 - (3) forest swiddens (cultivated as rotational bush-fallow systems) with dryland taro, yams, leafy greens and fruit trees (including some *Canarium* trees, around which spatial rotation took place);
 - (4) lowland yam swiddens worked by the coastal people, containing diverse additional crops (it was into these swiddens that the sweet potato was first incorporated upon its arrival in New Georgia); associated with smaller *Canarium* groves close to the coast.

These four components of a reconstructed agricultural "baseline" amount to a New Georgian version of the generalised "wet-and-dry" complex of Oceanic agriculture, as initially defined by Barrau. They stood in various relationships with one another, and the latter two may be seen as two rather similar categories of the general "bush-fallow" gardening principle followed in today's New Georgia.

The taro/*Canarium* "equation", represented in the closely associated cultivation of these two crops and in their culinary interdependence most notably in ceremonial puddings, is the most important of these relationships. Then as now, puddings are a key component of the New Georgian food repertoire (Leivestad 1995) – they constitute a prestigious, or more mundane (depending on type),

counterpart to fish, shellfish and pork, or they may be eaten separately since a proper pudding contains the two vital elements of a balanced food configuration in New Georgian terms: the "dry" (*popa*) taro (or any root crop) elaborated and "wettened" by the "fat substance" (*deana*) of *Canarium* nut kernels, smoked and crushed. In this sense the taro/*Canarium* linkage is analogous to the taro/fish equation underlying beach barter between coastal and bush groups of old Marovo. While the coastal people of old Marovo relied entirely on the bush people for their taro they were much more self-sufficient as far as *Canarium* nuts were concerned, as evidenced still today by the abundance of nut groves near old coastal village sites.

The singular importance of *Canarium* in Marovo is further underlined by the fact that the generic name for these nut trees, *buruburu*, also applies to the year – in the sense of the interval between two fruiting seasons of *Canarium*. This places Marovo firmly in a different line of long-term cultural history than the much more plentiful societies of Melanesia where the yam harvest signifies the passing of a year, and indicates the strong importance of arboriculture, probably of pre-Lapita origins, in the past and present lives of Marovo people. In former times the nuts were gathered by men who climbed the tall trees with special woven ropes, breaking off ripe nut clusters. With the collapse of religious-political regimes through pacification and the advent of Christianity from the early 20th century, the guardian spirits of *Canarium* tree climbing were reckoned to lose their powers, and so nuts were starting to be collected from the ground when fallen

– mainly by women. While in old Marovo, the processing of nut kernels and their export as an important commodity in interisland exchange was an all-male activity, the pattern has since been reversed: today, it is the women who crack the nuts and smoke-dry the kernels, subsequently to sell large quantities (in sealed tins or plastic buckets) to the hungry urban markets in the Solomon Islands capital Honiara.

The oral traditions of today's Marovo abound with tales about, and exact locations of, large and regionally powerful settlements of "prehistoric" times. Well-known legends, tales about mythical beings and epic accounts of warfare, conquest and catastrophe highlight certain key settlements (several of which are referred to as "abodes of seven thousand people") with populations that led lives structured by the requirements of cultivation and feasting cycles and tribute requirements. Activities in these great settlements centred on the pondfield cultivation of huge crops of taro, the annual harvesting of *Canarium* nuts, regular feasting involving the participation of friends and allies from near and far, and – for some with a more coastal orientation – overseas trading journeys, as well as warfare and raiding sometimes in regional alliances involving virtual navies of war canoes (see Hviding 1996 for examples). Some of these great settlements may in fact have been hierarchically integrated "super-communities" of taro-producing bush people and headhunting (as well as fishing-oriented) coastal people, often with much intermarriage (between coastal men and bush women), while those that were settled by distinct bush groups at least had long-term, hierarchical alliances (involving tribute and, again, marriage, as well as military protection) with coastal people living in large seaside villages or strings of hamlets.

How far may the extent, in social and spatial scale, of these complex systems of pre-colonial New Georgia be determined today? It is of great interest to note that the mapping of New Georgian forest types carried out by the late-colonial Land Resources Study (Wall and Hansell, 1975) appears to supplement, and to a large degree substantiate, oral traditions by providing reliable indicators of the whereabouts of the large pondfield systems of former centuries. Most locations that according to tradition supported large *ruta* and associated swiddens are dominated today by conspicuous stands of the large tree *Campnosperma brevipetiolatum*. Based on several decades of work in the Solomon Islands, forest botanist Tim Whitmore (1969, 1990) has shown that this light-demanding tree is typical of locations where the canopy has been severely disturbed in the past. In the Marovo Lagoon area the mapping of the Land Resources Study shows that there are dense *Campnosperma* stands in upland river valleys precisely where oral traditions locate old centres of bush settlement and *ruta* systems. The botanical evidence thus is a clear confirmation of what Marovo's own historians have told us, and the areas of *Campnosperma*-dominated forest is a useful indicator for estimating the former extent of pondfield systems, and inland settlement more generally, throughout the New Georgia Group.

The "Forest Types" map of the Land Resources Study (Wall and Hansell 1975, Map 4h) is based on air photographs taken in August 1962. At that time the forest types in question covered 614 hectares on Gatokae, 3,948 hectares on Vanguu, and 2,520 hectares on the "Marovo" portion of inland New Georgia. A tract of disturbed but *Campnosperma*-rich forest covers 419 hectares on the easternmost peninsula of Gatokae, where the legendary twin settlements of Tige Ulu and Tige Peka, the combined abode of 7,000 people leading lives in abundance and splendour with great feast of regional importance (Hviding, 1995:26-47). Similarly, the western and southwestern slopes of the mighty crater of central Vanguu have more than 1,600 hectares of relevant forest along river valleys. On the lagoon side of Vanguu there is a conspicuous 81 hectare patch of *Campnosperma* forest uphill at a location virtually overlooking a central place for the regularised beach barter between bush people and coastal people. This, too, corresponds with local traditions as to where people lived and worked their taro. In northern New Georgia the upper reaches of the Piongo Lavata river and nearby Vahole hills are areas known for the dense presence of *ruta* partly persisting into the 20th century, and in 1962 these areas were totally dominated by *Campnosperma*-rich forest (797 hectares) typically following the river valleys where the settlement-and-*ruta* complexes of the bush groups were located. Hviding and Bayliss-Smith (2000:137-141) provide detailed analysis of alternative scenarios concerning the possible extent, usage and "carrying capacity" of the pondfield systems of old Marovo, and of the possible pitfalls of such an approach.

It needs to be pointed out that "carrying capacity" for old Marovo cannot be measured on the assumption that all taro harvested went towards feeding the population of the area. Even in today's Marovo, 'good times' are measured with reference to whether one's household is able both to feed any number of unexpected visitors while still being able to throw away substantial quantities of leftover food surplus to the needs of the household (including visitors). "These are poor times", an old *butubutu* leader said to me one day in the "dry" tradewind season of 1986, and continued, "for so many mornings now, we haven't been able to throw much food away into the sea, and nothing is left to rot!". Far from being anecdotal, this glimpse of everyday rhetoric about good times and bad points to the need in Marovo to afford waste and defines a deeper pattern of conspicuous consumption. The grand feasts of before, it is often pointed out, involved the literal throwing-away of food – hence the quantities of taro necessitating a separate number (*vuro*) for tens of thousand. Adding to this in old Marovo would be the substantial, and perennial, needs for taro as an ingredient in all the puddings being burned in shrines as offerings to ancestors and other spirits. And today's common sight of small piles of rotting crops in the village "tithe-house" – the important thing is to offer the tithe, and whether or not it is bought back again from the tithe-house for consumption by others is regarded as a moot point (cf. Leivestad 1995) – is a smaller-scale echo of the "waste"

that is likely to have characterised the handling of huge taro harvests in olden times.

The *ruta* of old Marovo could, and had to, produce far more taro than what was needed to sustain the people of the lagoon and surrounding lands. In other parts of Melanesia irrigated pondfield systems are noted for their high productivity (e.g., Spriggs 1981). The relative importance of irrigated terraces compared to forest swiddens must have varied in different parts of New Georgia, but it is clear that in general the *ruta* systems of the area were far more important than has so far been recognised. *Ruta* were invisible to European visitors, being hidden from the coast. With an increasing frequency of European trader contact from ca. 1850 onwards the system was soon destabilised, as *ruta* cultivation was vulnerable to disruption through warfare (intensified from the first arrivals of steel axes) and population migration (intensified during a latter stage of indigenous “pacification” [cf. Hviding 1996]). In post-steel times its relatively labour-intensive character made it a less attractive option than forest swiddening, while subsequently the new demands imposed by coastal residence and cash cropping – as well as a general transformation and disruption of hierarchical, exploitative and predatory, yet regionally integrative, coastal polities – further destroyed the viability of the *ruta* system.

Epilogue

In today’s Marovo Lagoon, local concerns relate directly to global issues of logging, mineral prospecting, industrial fishing, conservation and other facets of the “resource development” arena, and to how proper conditions for sustainable village life can be maintained in the face of such challenges (Hviding 1996, Hviding and Bayliss-Smith 2000). Yet it is precisely in these modern encounters between Marovo people and agents of Western (and Eastern) capitalism that the long run of agricultural history and rainforest usages, of land-sea divisions and interdependencies and of rank and customary leadership emerge most forcefully. Ancient rock-walls of *ruta* deep in the bush, shrines with *mana*-bestowing ancestral skulls in forest and on reefs, stone foundations of settlements of former splendour, and other “megalithic” structures – all form part of a cultural landscape that, linked to genealogies, infuses history and local identity with powers that reach far beyond the local. The “tales of the forest” remain constitutive also of younger Marovo generations’ lifeworlds. Some prominent contemporary leaders have even advocated the return to the forest and the revival of irrigated taro cultivation as means to counter coastal population pressure and to reclaim the usefulness of the inner lands whether logged by companies or still “pristine” – in the latter sense as a cultural landscape of mature secondary forest scattered with signs of settlement and *ruta* cultivation, modified generations ago by the dwellers of the bush.

Notes

Maps were drawn by the Department of Geography,

University of Cambridge, and originally produced for Hviding and Bayliss-Smith (2000).

1. For comments and discussion concerning this paper I thank the participants at the 1999 “No Barriers” seminar, as well as Karen Leivestad who, as always, has provided stimulating criticism. The arguments and observations presented here in large measure derive from my long-term joint research with Tim Bayliss-Smith, and I wish to acknowledge his contribution not just in terms of the co-authored analysis (Hviding and Bayliss-Smith 2000) on which much of this paper builds, but also in terms of his more general inspiration without which my Marovo research might not have moved so deeply into matters agricultural.
2. The lamentable lack of archaeological work in the important islands of New Georgia is presently being partly remedied by the New Georgia Archaeological Survey (NGAS), an ambitious multidisciplinary project investigating the archaeology and cultural history of the Roviana Lagoon, carried out jointly by New Zealand universities and relevant Solomon Islands institutions including the National Museum and the Western Province Division of Culture. This project also focuses on taro cultivation and will, when results accumulate, provide a basis for further comparison such as between the historically important power centres of the Roviana and Marovo lagoons.

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**The sweet potato in Pacific Context.
-Sweet and soft, but still a «hard fact»**

Paul Wallin¹

«Here we begin at birth by eating sweet potatoes, then we go on eating sweet potatoes, and finally we die» (Easter Islander c. 1860, in Métraux 1940:153)

Introduction

Genetic studies have determined that the sweet potato originates from the South American continent (Yen 1963). Since this is now a generally accepted fact among botanists, it is probably one of the strongest pieces of evidence that contact between South American Indians and Polynesians has taken place in prehistoric times. But the question is how and when did this plant reach Polynesia? One theory is that the Polynesians (fig. 1)



Fig. 1. The Polynesian double canoe Hokulea in Cook bay, Mo'orea 1985. Photo: P. Wallin.



Fig. 2a. Jacqueline and Thor Heyerdahl at a reed boat relief in Tucume, Peru. Photo: A Skjølsvold.

continued their search for new lands all the way to the South American continent. From there, they brought the sweet potato back to their Polynesian homeland. Another, equally possible theory, is that South American Indians brought the sweet potato to Polynesia (Figs. 2a, 2b, 3a, 3b). The fact that South American Indians already had seaworthy vessels (such as reed boats and balsa raft) in pre-Inca times, and that they were skilled navigators



Fig. 2b. The reed boat Uru at the arrival to Nuku Hiva in the Marquesas Islands. This reed boat was sailed by the Spaniard Kitin Muños in 1988 from Peru to Nuku Hiva in 54 days.

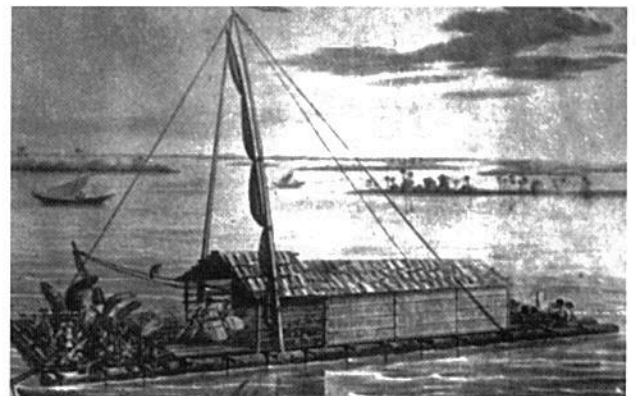


Fig. 3a. A ancient type of Peruvian balsa raft (From Humbolt 1810).



Fig. 3b. The Kon-Tiki raft arriving to Raroia in 1947. Photo: The Kon-Tiki Museum.

(Heyerdahl 1995:219), is no longer questioned. Furthermore, the Quechua Indian word Cumar for sweet potato is similar to the Polynesian word Kumara, which also points to a connection (Heyerdahl 1952, Bellwood 1979:146). This similarity concerning the name, also indicates that the domesticated sweet potato has been spread with the help of humans, either Polynesians or South American Indians, and not by «natural ways» as sometimes has been mentioned. The dispersal of the sweet potato to all the marginal areas of the Pacific also shows that there must have been a wide network of contacts at the time of dispersal.

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The aim of this paper is to investigate the discussion concerning the dispersal of the sweet potato, and its importance as a cultivated plant in Polynesia. Its early existence as a domesticated plant in South America and its prehistoric existence in Polynesia will also be discussed through archaeological finds and find sites. Another important question is whether a change of subsistence may be seen in Polynesian societies when the sweet potato became important or when it was introduced.

Origin and archaeological evidence of the sweet potato in South America

The Latin name of the domesticated sweet potato is *Ipomoea batatas* (Fig. 4). There are also a number of wild *Ipomoea* species, however since genetic studies of this plant started, paleo-botanists (Nishiyama and Teramura 1962 and Yen 1971) have suggested that the sweet potato probably originated from the cultivation of *Ipomoea trifida*, or at least that this plant is the closest relative (Brand 1971:344). Many of the wild *Ipomoea* species are self-fertile, but *Ipomoea trifida* and *Ipomoea batatas* are generally self-sterile, which indicates, among other things, their close relationship (Brand 1971:345).



Fig. 4. Sweet potatoes (*Ipomoea batatas*). Photo: Sebrafilm.

The earliest use of wild sweet potatoes as a food resource has been found in a midden in a cave site at Chichla Canyon, on the central coast of Peru, and is dated around 8000 B.C. (Engel 1970). During the period 4000-2000 B.C. the landscape changed from glacial, with grass

savannahs, to similar to what it looks like today. It was during this time that agriculture really developed in the river valleys and archaeologists have found a very rich range of domesticated plants, such as, sweet potato, avocado, bottle gourd, and manioc etc. in middens and ruins from this period. Some sites worth mentioning are, for example, Pampa de las Llamas, Huaynuma and Las Haldas in the Casma Valley (dated to about 2000-1000 B.C.). Sweet potatoes have, of course, also been found in later Chimu contexts, for example, at the site at Ancon just north of Lima (about A.D. 1000-1500) (Ugent and Peterson 1988:10). We can see from this that the sweet potato has been used as a food resource for about 10000 years.

Archaeological evidence of sweet potatoes in Polynesia

According to the paleo-botanist Douglas Yen (1974) the sweet potato (*Ipomoea batatas*) was introduced to central Eastern Polynesia from South America in prehistory. Two subsequent dispersal have taken place to islands in South East Asia, and the New Guinean highlands brought about by Spanish and Portuguese colonial expansion in the 16th and 17th centuries. Furthermore, there is no doubt that the plant existed in Eastern Polynesia at the time of discovery since it is described as being cultivated by Cook and La Pérouse on, for example, Easter Island, Tahiti, New Zealand and Hawaii (Yen 1974:8-9). In early European records Easter Island plantations were described as numerous and well ordered. La Pérouse observes in 1786, that they were «prettily laid out by line» and Cook 1774 says they are organised «in a rectangular figure» (Métraux 1940:152).

There are a few examples of archaeological evidence in East Polynesia. The first to make such an observation was the Norwegian archaeologist Arne Skjølsvold (archaeologist on Thor Heyerdahls 1955-56 expedition to Easter island). During excavations of a circular house he found charred plant remains, such as sugar cane, a nut like fruit (Makoe) probably from the Chile palm, and sweet potatoes. He found them in and around an earth oven (umu) situated at the centre of the house (Skjølsvold 1961:297). The oven was dated to A.D. 1437-1619 (cal. 1 sigma). In 1971 Rosendahl and Yen reported a carbonised sweet potato tuber at Lapakahi (Island of Hawaii). It was found in a region with extensive dry-land agricultural field systems (Kirch 1984). This tuber was associated with a cultural layer dated to 295 BP (ca A.D. 1600-1800), in other words, the late prehistoric period. Storage pits in New Zealand, probably constructed with a roofed superstructure (indicated by potholes), have been interpreted as being storage places for sweet potatoes, and date from the 13th century A.D. onwards (Bellwood 1979:146, Davidson 1984:121-127). Such pits are also mentioned in Maori legends (Best 1995:144). The New Zealand archaeologist Douglas Sutton recently excavated a cache of sweet potatoes at Pouerua, North Island of New Zealand (Hather and Kirch 1991:888).

In 1991 Hather and Kirch reported the first archaeological evidence of sweet potatoes found in central East Polynesia. This important find was made on the small

volcanic island of Mangaia in the southern Cook Islands. The find site, which included a number of carbonized sweet potato tubers or pieces of them, is a large rock shelter called Tangatatau. The site which consisted of a deep stratified cultural deposit was continuously used between c. A.D. 1000-1600. Remains of sweet potatoes were found in almost all layers of the deposit. One sample was found just above a charcoal lens dated to A.D. 988-1155 (calibr.) and just under another layer dated to A.D. 1409-1440 (calib.). Another sample was situated between two layers dated to A.D. 1162-1280 and A.D. 1327-1438 (Hather and Kirch 1991:889). Based on these facts, Hather and Kirch conclude that these finds of prehistoric sweet potatoes in Mangaia indicate the «presence of *Ipomoea batatas* in central east Polynesia by around A.D. 1000» (1991:892-93), and that this find «obviously raises issues of cultural contact between the coast of South America and the Polynesian Islands» (1991:893). In their opinion «the most likely transferors would have been the seafaring Polynesians, on a voyage of exploration to South America and return». But in the next sentence they continue «This opinion cannot be unequivocally determined on present archaeological evidence» (1991:893). It is also possible to criticise Hather and Kirch's conclusion that the sweet potato is now dated to around AD 1000. In their statement they are choosing the earliest possible date of the range which in fact is AD 988-1440. In other words, it is equally possible that the dating could be set to AD 1400. However, to be realistic the dating should have been set at around AD 1100-1300. It might also have been a good idea to use a small piece of the carbonised sweet potato itself to get the first direct dating of a sweet potato in Polynesia.

Anyway, we can conclude that there is archaeological evidence, through prehistoric remains of sweet potatoes, which shows that there has been cultural contact between Polynesians and South American Indians in prehistoric times

A discussion of dispersal and cultural interactions

A common theory concerning the dispersal of the sweet potato is that it was introduced to central Polynesia at about A.D. 400-800 (there are however no C-14 datings) and then dispersed from there to the rest of east Polynesia (Yen 1971:329).

If we look at the sweet potato in a cultural context on Easter Island, where the sweet potato was an extremely important food resource, we can today make the observation that, for example, the Easter Island monumental architecture, the *ahu*, is now securely dated by radiocarbon dating to about A.D. 1000-1100, and perhaps even earlier, which is earlier than any other monumental structures in East Polynesia, so far. This stone work (Fig. 5), together with the sweet potato, may open for an alternative way for the introduction of the sweet potato to Polynesia, namely by way of Easter Island. This is a theory that has been suggested by Thor Heyerdahl earlier, on the basis of ethno-historical evidence (Heyerdahl 1963). If the monumental architecture developed due to a contact with South American Indians around A.D. 1000-1100, the sweet potato was probably



Fig. 5. Ahu Vinapu, Easter Island. Photo. P. Wallin.

introduced to Easter Island at the same time. The dating of the introduction of the sweet potato to Mangaia at around A.D. 1100-1300 fits into this picture quite well. According to this the sweet potato and the idea of ceremonial stone structures with an *ahu* platform would have reached central Polynesia at this time. Furthermore, the *ahu/marae* is an expression of control. Control over the land was probably clearly defined if, at the same time, the subsistence changed with the introduction of the sweet potato.

If the so-called early «expansion» period in East Polynesia occurred at circa AD 300-1000, and a period of «local developments» occurred following this, which has been suggested (Kirch 1984:82-95), then the dispersal of the sweet potato and the dating of monumental structures, do not really fit into this picture. These features (the sweet potato and monumental structures) indicate that contact and interaction must have been of great importance in East Polynesia including Easter Island, during the first centuries following AD 1000. The scenario, as it has to be on the basis of archaeological facts, is that there is strong evidence of continued cultural contact and interaction following the initial settlement phase in the area.

Summary

To sum up, the point of this paper was to show that the ecofact, the sweet potato, found in archaeological stratigraphic contexts should be defined as an archaeological «hard fact» in line with other artefacts, for example, ceramics etc. I have also tried to show the importance of cultural contact, between Polynesians and South American Indians, through which the sweet potato spread throughout Eastern Polynesia, and that the sweet potato probably provided the economic base when, for example, the Hawaiians developed a highly stratified society, and the Easter Islanders managed to maintain an elevated stone working tradition for several hundred years.

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Cultivating an Identity: Agriculture and Social Space in Hanatekua Valley, Hiva Oa, Marquesas Islands

Reidar Solsvik*

Agricultural practice and identity in the Marquesas

In this paper I intend to explore the relationship between identity, agriculture, and space, in the Hanatekua valley, on Hiva Oa, in the Marquesas island (Fig. 1). The archaeological analysis is based on the survey by P. S. Bellwood (1972). My approach to 'identity' is through a study of "identity as social-practice", focusing on the internal aspects of 'identity', the constitution of a self through participation in community life and membership in distinct social fields.

First, I will try to briefly sketch out how the constitution of a social identity and the development of social relations are the outcome of various rites in which agricultural products play an important part. Secondly, I will take a closer look at how different agricultural structures are associated with the various social fields in the Hanatekua valley.

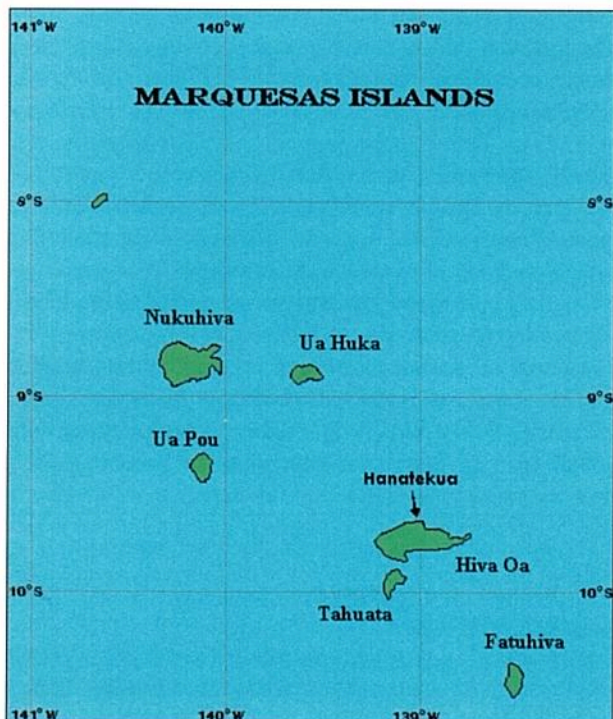


Fig. 1. Map of the Marquesas Islands.

¹ We do not know whether this provisioning was made solely for the first-born, or the first-born son, or if it was also occasionally made for first-born girls. However, it seems that people from different social stratas practised this custom because Handy does not mention the *banyan* as one of the trees planted. This tree was considered sacred, and only individuals of high rank were probably allowed to make bark-cloth from this tree.

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The planting for the first-born

When a Marquesan of some standing had a first-born son¹, he planted breadfruit, banana, coconut, and paper mulberry trees in a garden (or gardens) in the vicinity of his house (Handy 1923:79-80), and began to raise pigs. Both the trees and the pigs were the property of the new born, and were to provide food for feasts and raw material for bark-cloth, to be worn, or exchanged, on those occasions. I believe that these gardens were intended to be an economical base for ritual investiture in the formation of the social standing and identity of the child. Although the Marquesans did not practice any rite(s)-de-passage to mark the transformation from boy to manhood (Handy 1923:93), there are several rites, which seem to have been important in the coming of age. I will only briefly mention the three most important rites here:

- The *hakahe'e*, a ceremony in which boys and girls were presented to the tribe at the feast place (Handy 1923:92-93), as their genealogy was chanted.
- *Tehe te akau*, an operation conducted between the age of 7 and 12, in which boys were incised and got their physical appearance as men (Handy 1923:94-97).
- Tattooing, usually performed on boys between the ages of fifteen and twenty (Handy 1923:97-98).

Ceremonial bark-cloth and ritual meals played an important part in all three events, and I would argue that the garden(s) of the first born did play a significant part in these provisions, at least symbolically, if not actually. In connection with both the tattooing (Handy 1923:97) and the *tehe te akau* (Handy 1923:96), the whole rite was sponsored by a father for his first-born son, which means that other youths were given the opportunity to participate in events important to their image as men. In this way, agricultural practice was linked to the development of social identities, both for the first-born and for the youths that participated in them. Furthermore, I would also argue that these sponsored events created social relations or dependencies, between the sponsor and the participants. A bond of loyalty that may have been important in establishing the eating-societies described by Crook (1800) and Robarts (1979). This view also helps to explain the degraded social position of the landless in the Marquesas Islands. They had no means of reproducing, or enhancing, the self of one's off-spring, and they could not be real social beings.

With this brief comment on identity and agricultural practice in the Marquesas Islands in general, I like to turn to an analysis of social space and agriculture in Hanatekua valley, Hiva Oa.

Social space and agricultural practice in a Marquesan Valley

Hanatekua, is a small valley on the north side of Hiva Oa, with very steep valley walls. It has a fairly high amount of rainfall, and all of the traditional Marquesan crops like taro, yams, sweet potato, banana, sugarcane, and breadfruit could be grown here (Bellwood 1972:3). The

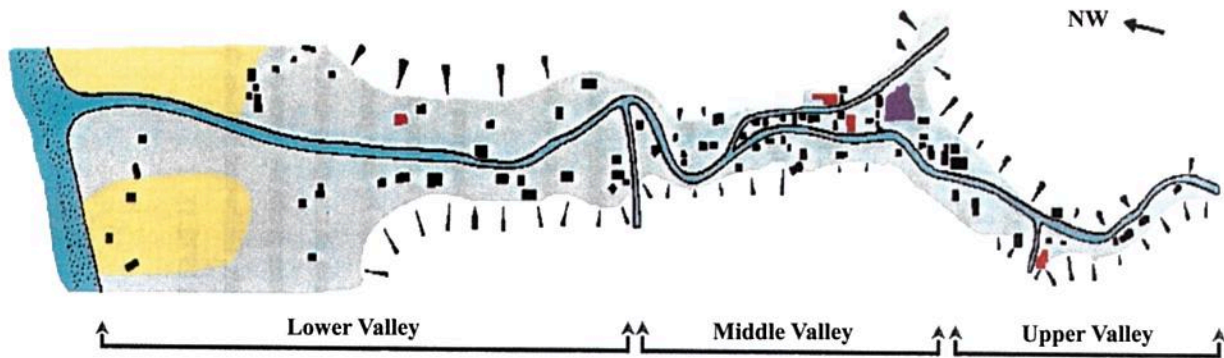


Fig. 2. The Hanatekua valley on Hiva Oa.

ridges and uplands surrounding the valley, however, seem not to have been under cultivation.

Peter Bellwood, who surveyed the valley in 1969 (Bellwood 1972), divided it into three zones, the lower, middle, and upper valley (Fig. 2), based on the distribution of agricultural enclosures and the general pattern of settlement (Bellwood 1972:36-39). Both habitation and agricultural production were mainly concentrated in the middle segment of the valley, a pattern which has also been found in the Hakao'hoka valley on Ua Pou (Ottino 1985:xvixx).

Social space in Hanatekua

In this section I want to investigate the relationship between social identity and agricultural practice in the Hanatekua valley on Hiva Oa. In order to facilitate this, I will briefly refer to an earlier study (Solsvik 1999 & Forthcoming) of the dwelling-*paepae* in this valley, and how they can be attributed to various social fields. I constructed a 'social space' of the valley, based on various qualities of all the recorded dwelling-*paepae* in Bellwood's survey². The result of this study is presented in figure 3, where four or five different social fields are distinguished. I would argue that the two components of the analysis discriminate between economical standing and sacredness of house, or rather the owners³. The five social fields are as following:

- **A Political field:** Large, low, stepped platforms, with the step of the house faced with cut, red slabs (*ke'etu*). They are all close to the *tohua* and the seaward *me'ae*, and may represent secular functions and powers in the valley.
- **A Religious field:** With small, high, stepped platforms, and small verandas. All close to the religious centre of the valley, *me'ae* 3 & 4.
- **An economical field:** Very large, very low, stepped platforms, with the step faced with courses of water worn stones. Due to their size, their distance from both *tohua* and *me'ae*, and close association with agricultural structures, I take them to represent wealthy, non-*tapu* people.
- **A mixed field:** Non-stepped, small, but high platforms, which are all strongly associated with agricultural structures. May be a mixed group, with both agricultural shrines and men's-houses.
- **A Poor field:** Represented by several small clusters of very small, non-stepped platforms. These *paepae*

could be earlier platforms which do not fit into the scheme, but they may equally well represent the dwellings of the common people.

Although not shown in the CA diagram, there are two interesting associations between dwelling-*paepae* and agricultural structures, which might be mentioned⁴. First, what I have termed the mixed field is closely associated with all variables relating to agricultural structures, except when the *paepae* had only one or two agricultural enclosures in its vicinity. Interpreting this finding is difficult, but it does suggest that persons in the religious field did not have need of the large production units, men's houses, agricultural or private shrines, or had many dependent workers in their service. Second, the wealthy field is more closely associated with almost all of the variables related to agricultural structures, than both the religious and political fields. This observation may reflect the fact that non-*tapu* people could own more land than any chief or priest (Denning 1971:174, see also Thomas 1990:50-52).

Social space and agricultural practice

To get some further insights into the relationships between social identity and agricultural practice, I have plotted all dwelling-*paepae* against the four types of agricultural structures defined by Bellwood (1972:37). Three interesting associations can be found in this diagram. First, the groups of *paepae* that I have termed poor or low status fields are not closely associated with agricultural structures of any kind. Landless people did not have an agricultural production of their own. Secondly, the wealthy field is more strongly associated with open and terraced

² The analysis considers various constructional variables, distance between the platforms and any one of the four *me'ae* in the valley, the association with agricultural structures, and directional and locational information

³ The X-axis seems to differentiate between factors relating to size and workmanship of the *paepae*, and the distance these platforms is located from the *tohua* and *me'ae* 1. The most important discriminating factor on the Y-axis is the distance from each dwelling to the religious centre of the valley, *me'ae* 3 & 4.

⁴ In constructing the final CA diagram, the following relationships between dwellings and agricultural structures were considered: (1) Whether or not the platforms were associated with a *ma-pit*. (2) Whether or not the platforms were associated with agricultural enclosures, large or small, and the number of agricultural enclosures associated with each dwelling (0-2, 3-5, 6-10, more than 10).

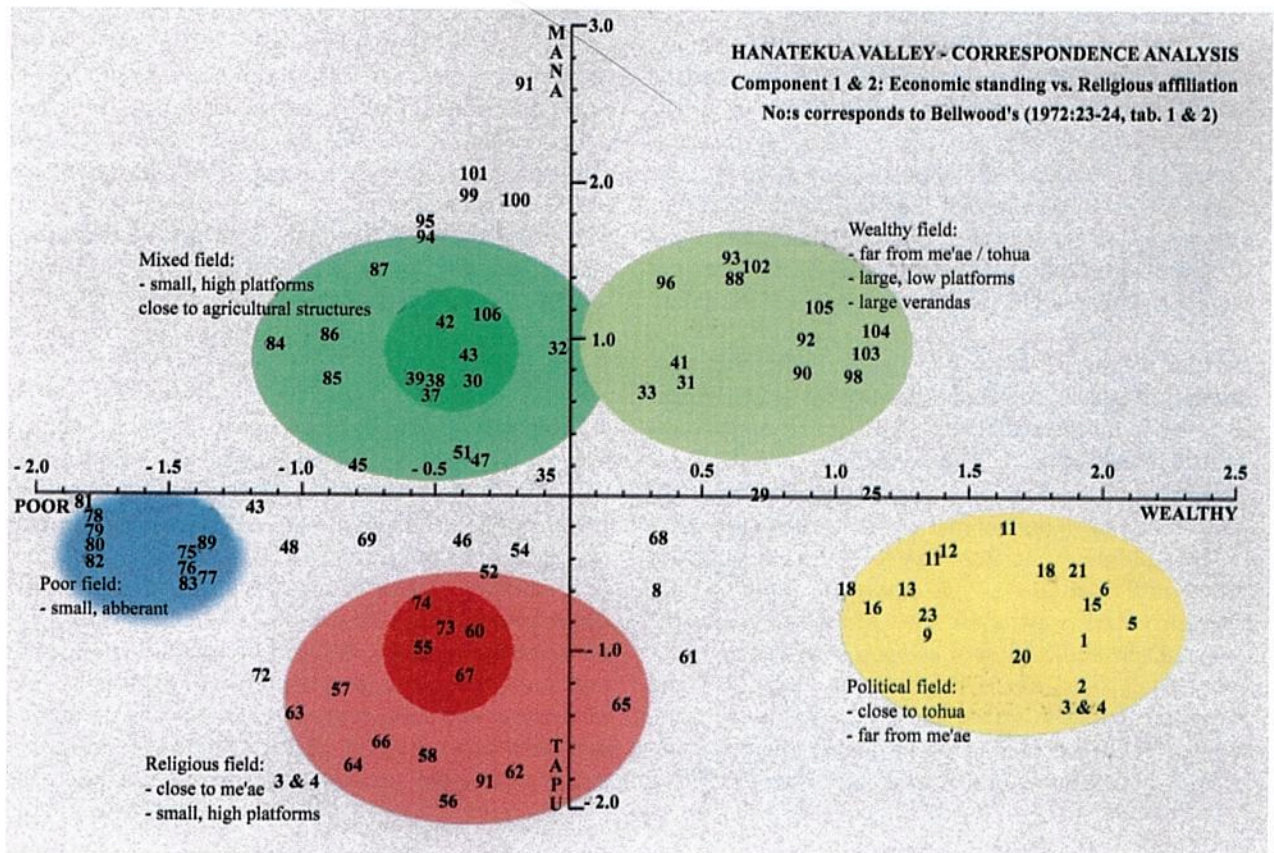


Fig. 3. Correspondence analysis (CA) of the Paepae structures in the Hanatekua valley, Hiva Oa.

enclosures than with fully enclosed agricultural plots. As we know, enclosed space was important in Marquesan symbolism, and it could be that fully enclosed gardens had some symbolical meaning attributed to them, setting them apart from other gardens. One hypothesis may be that gardens which were planted for first-borns, and which played a part in the constitution of a social identity had to be of the fully enclosed type. If this was the case, it would be logical that people of the permanently *tapu* class had relatively more fully enclosed gardens than rich people who were not permanently *tapu*. One further support for this view is that both the religious and political fields are somewhat closer to large, fully enclosed gardens than to small ones. The third point to notice in this diagram, is that the structures I have defined as mixed fields are closer to open, or terraced, enclosures than to fully enclosed gardens. If my interpretation of this group is correct, in consisting of agricultural shrines and men's houses, then their close association with open enclosures might indicate a weak spot in my argument.

Concluding remarks

In this paper I have tried to argue two points. One, that the variation in agricultural structures in the Marquesas Islands might not only be the result of functional differences, i.e. that each type is intended for growing different crops (Bellwood 1972:36-37 & 39). Rather, some

variation may be attributed to a difference in the meaning of the structures themselves. Second, in being more specific, I have argued that at least some of the fully enclosed agricultural structures found in the Hanatekua valley are gardens planted for the first-born. These gardens were important in constituting social identities and establishing social relationships, or dominance. Practices most commonly found in the political and religious field of the society, among the chiefly and priestly clans, though these practices seem to have been of importance even among landowning, non-*tapu* people.

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The Roots of Precedence in Tonga 'Leading' and 'Following' as Naturalised Concepts

Arne Aleksej Perminow¹

In the first week of July 1777 Captain James Cook prepared to sail on from Tonga to his fatal encounter with the Hawaiians. Learning that the Tongans were preparing for an important ceremonial occasion, he decided to delay his departure so that he could witness it. This event was hedged about by strict taboos and the Tongans did their best to stop Cook from participating. The explorer was not easily deterred, however. Indeed, his resolve to participate in spite of the Tongan attempts to keep him away, has been used by the anthropologist Obeyesekere, as an example of the explorer's ruthlessness and tendencies for self-magnification (Obeyesekere 1992). There may very well be truth in this. Whatever the source of Cook's intrusiveness, it has produced the only detailed eye-witness account of what is known as an *'inasi* ceremony.

Students of Tongan culture have described this ceremony in several ways: as an annual "harvest festival" (Gifford 1929:345); as "an annual tribute" (Grijp 1993:213) to the King, the Tu'i Tonga; and as "an annual first fruit ceremony at which the new yams were brought to the Tu'i Tonga." (Bott 1982:39). The strong association between the *'inasi* ceremony and the Tu'i Tonga institution is indicated by the fact that their significance declined together in the upheavals of the rapid Christianization that took place during the first part of the 19th century.

Cook's description of this *'inasi* ceremony has puzzled the historians, because some of its dramatic events seem to go against the grain of Tongan culture. Particularly, scholars have been troubled by the attention that was paid to the young son of the Tu'i Tonga in the *'inasi*. In his book *Island Kingdom; Tonga Ancient and*

Modern, the historian Ian Campbell stresses the challenge of interpreting Cook's observations: "It is difficult to know what this ceremony meant, for the paying of such honours to a boy, and while his father was alive, was quite contrary to Tongan custom." (Campbell 1993:37). The specific part of Tongan custom the ceremony appears to contradict is the general association between social worth and patrilineal seniority. Among such relations of seniority the father-son relation still stands out as **the** prototype of relations of authority and submission (see among others Rogers 1977; Perminow 1993; Morton 1996:126-128). In Cook's description of the *'inasi*, the climax of the events appeared to be when the Tu'i Tonga and his son were presented with some roasted yams which they ate together. Cook only caught glimpses of it because the Tongans tried their best to block his view and to make him turn around and bow his head like the rest. It is perhaps this 'eating together' more than anything else that has confounded the historians, because very strict rules of avoidance in father-son interaction normally restricts father-son commensality in Tonga, and particularly so on public occasions. This failure of the *'inasi* events to conform to general expectations about cultural appropriateness, has made scholars suggest that the *'inasi* ceremony that Cook observed was highly atypical. The strangeness of the events has been interpreted in the context of the political struggle of turbulent times in which one faction sought to strengthen the claim of their candidate to become the next Tu'i Tonga, presumably by strategically inserting him into the procedures of the ceremony. Elisabeth Bott, following Queen Salote of Tonga herself, interprets the perceived anomaly as "an attempt to elevate the twelve year old son of the King, really to make him Tu'i Tonga instead of his father. An attempt that was engineered by his mother, an exceedingly ambitious woman. . ." (Bott 1982:39). The historian Phyllise Herda (Herda 1987), on the other hand, uses genealogical material to argue that it was the Tu'i Tonga himself who used this ceremony

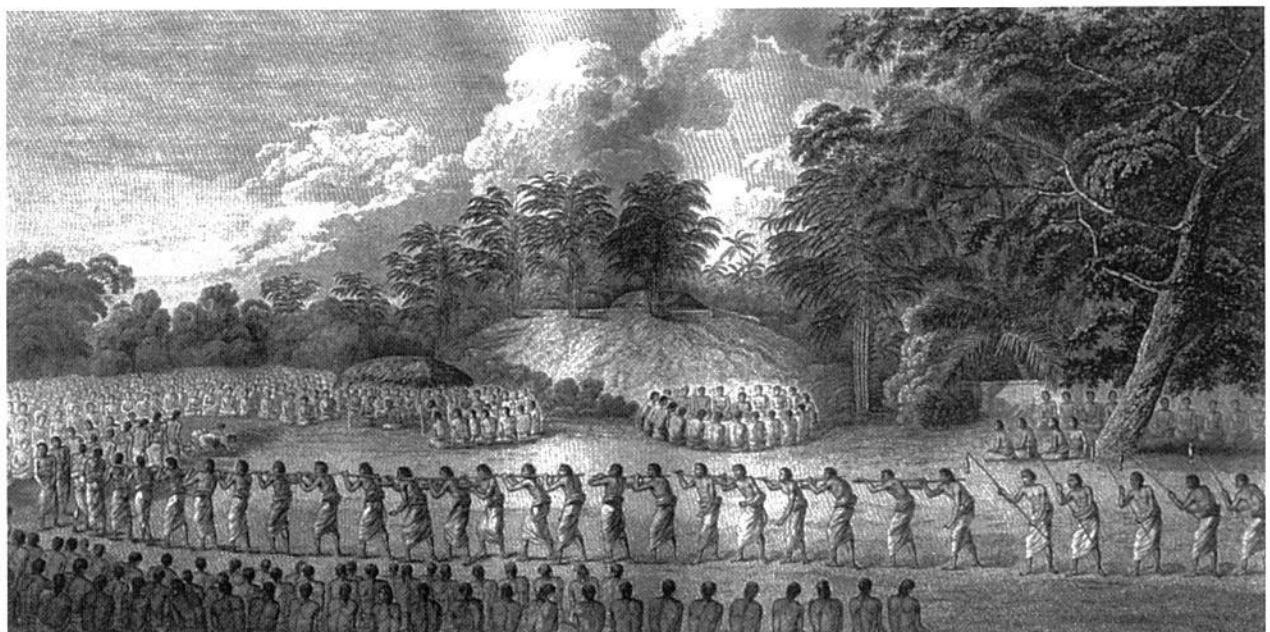


Fig. 1. The *'inasi* ceremony observed by Cook in July 1777 (From Cook 1784).

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to ensure that an offspring with doubtful legitimacy should succeed him. Ian Cambell supports Herda's interpretation by noting that Paulaho, who held the Tu'i Tonga title at the time, "could well have had anxieties about the succession because his own succession was irregular." (Cambell 1993:40)

These were indeed troubled times in Tonga an no doubt characterised by many kinds of irregularities. To my mind, there is nevertheless one problem with both of these explanations which makes it worthwhile to look for alternative kinds of interpretation by examining again Cook's description of what actually took place during this *'inasi* ceremony. To my mind it is a problem that both interpretations conclude that the *'inasi* ceremony witnessed by Cook was atypical while leaving unexamined numerous clues to what this ceremonial occasion was all about that Cook left us in his logbook. Since the *'inasi* of 1777 that Cook witnessed is the **only** *'inasi* ceremony of which we have detailed first-hand observations, a conclusion that it was atypical is not primarily based on notions about what to expect of this specific kind of occasion. Rather, it is based on notions of general cultural appropriateness. But if key events in this *'inasi* ceremony appear to contradict characteristic cultural values, it would not be the first time that what goes on in a ritual fails to conform with the values of normal social conduct. Indeed, the lack of correspondence between the events of the *'inasi* and characteristic norms of social conduct, is puzzling first of all if one regards the basic meaning of a ritual to be that of reflecting social norms and of representing a particular social order. To decide to what extent the *'inasi* witnessed by Cook was atypical it is, I would argue, necessary to try to figure out what this kind of occasion was meant to achieve. Rather than accepting that the lack of fit between the *'inasi* events and ideals of normal social conduct shows that it was atypical, I have chosen to offer an alternative interpretation of what the symbolic elements that Cook observed may have been meant to bring about. To my mind a notion of what the staging this **kind** of event may have been meant to achieve, is an essential context for judging the appropriateness of the ritual means of achieving it.

Although puzzled about the strangeness of this single *'inasi* of which we have detailed information, Elizabeth Bott was quite clear about what an *'inasi* was generally meant to bring about: "The *'inasi* is an annual first fruit ceremony at which the new yams...were brought to the Tu'i Tonga...to secure a bountiful harvest and the welfare of the country and the people." (Bott 1982:39). She does not, however, choose to use this as a context for interpreting the 'strange events' that Cook witnessed in July 1777. In what follows I shall show how the prominence of the young son of the Tu'i Tonga in this specific kind of occasion, makes good sense in the wider context of the agricultural conditions that the *'inasi* was meant to produce. Furthermore, I shall argue that the exploration of the wider context of yam cultivation and general notions of natural growth may produce valuable insight into the naturalisation of concepts of 'leading'

and 'following' that are quite fundamental in a characteristic Tongan logic of social precedence.

William Mariner who stranded in Tonga in the beginning of the 19th century is an important source to pre-Christian beliefs and practices in Tonga. His claim that October was the usual time to conduct the *'inasi* has been widely accepted (Martin 1991). Thus Elisabeth Bott, who in close collaboration with the late Queen Salote, has done much to reconstruct Tongan pre-Christian customs, felt that it was hard to know why the *'inasi* witnessed by Cook was conducted in July instead of October. Indeed, this unexpected timing may have contributed to make her and other scholars feel that Cook's *'inasi* was indeed atypical. There are clear indications, however, that July was not at all an atypical time to stage a particular kind of *'inasi* ceremony. Thus in *Island Kingdom* Ian Cambell claims: "Every Tongan had an obligation to pay certain quantities of produce to his chief from time to time and especially in July and October for the *'inasi* ceremonies..." (Campbell 1993:31) To learn more about the significance of these two dates given for the *'inasi* we must turn to the missionary John Thomas who worked for more than 40 years in Tonga from 1825. In his unpublished journals, that are kept in the Mitchell Library in Sydney (Thomas 1825-67), he distinguishes between **two** kinds of *'inasi* ceremonies. The first kind was referred to as the *'inasi 'ufimui* which may be translated as 'the tribute or offering of young or immature yams'. The second kind was referred to as the *'inasi 'ufimotu'a* which means 'the tribute or offering of mature yams'. According to Rev. Thomas it was 'the tribute of immature yams' that Cook witnessed in July 1777. This is confirmed in Cook's own logbook where he reports to have been told that: "...a far greater...ceremony than this would be performed on the same account in about three months time." (Beaglehole 1967:154). In other words in October. Thomas' Tongan informants seem to have emphasised the difference between these two kinds of *'inasi* events. In contrast to the October tribute of 'mature yams' the July tribute of 'immature yams' was, according to Thomas not a great public event but: "a solemn yearly gathering of chiefs and priests...to present the... first young yams to the gods at Tu'i Tonga's house in Mu'a,..., **to bless the seed now about to be put into the ground** that the yam set may bring forth a crop." (Thomas 1825-59: 262). The instrumentality of this offering of immature yams at what thus appears to have been the opening of the 'planting season', the *to ta'u*, comes through strongly in Thomas' account:

"This great Inaji was chiefly in the hands of the priests who acting for the gods, gave orders, when the yam seeds ... were to be planted at each district. The yams for the Inaji were planted some weeks earlier and planted in purpose for this service, and were dug up long before they were ripe having grown some six or eight inches long only." (ibid:264)

The presentations made at the July 'tribute of immature yams' in contrast to those made at the 'tribute of mature yams' in October, were not substantial. Rather, they

consisted of what we may call token yams, or emblems of growth exposed to the blessing of the Tu'i Tonga and also to the expertise of priests who gave instructions about how to proceed with the task of achieving agricultural success. Thus Captain Cook, noted that what the Tongans referred to as presentations of yams were actually small sticks:

"...about four feet long and to them were tied two or three others not bigger than ones finger...The small pieces of sticks that were tied to the others we were told were yams, so that probably they were to represent this root emblematically. The hindmost Man of each couple. . .placed one of his hands to the middle of the stick as if [the stick] alone was not sufficient to support the weight that hung to it, and under which they all seemed to bend as they walked." (Beaglehole, 1967:147)

Throughout the events observed by Cook growth, and growth by multiplication in particular, stand out as a consistent theme of symbolic elaboration. Thus, in addition to the 'emblematic yams' in the form of several small sticks attached to a larger stick and heavy with promises of growth, the presentation of fish similarly implies multiplication:

"This first Procession was followed by a second, the Men who composed it brought Baskets such as are usually used to carry provisions in... These were followed by a third Procession who brought in different kinds of small fish stuck to the end of a forked stick. (ibid.:153)

Again, what was emphasised was the potential of growth by multiplication rather than an abundance in terms of size or amount. When the curious Cook went to find out what the **baskets** contained, he discovered that they were empty and concluded:". . .the ceremony being over they became simply what they really were, viz. empty baskets, so that whatever they were supposed to contain was emblematically represented... (ibid.:153).

This elaboration of multiplication makes very good sense if Thomas is correct in supposing that this July 'tribute of immature yams' was aimed at achieving growth at the beginning of the 'planting season' of the cycle of yam cultivation. Descriptions of old as well as contemporary Tongan yam planting strategies make it clear that growth and regeneration is achieved precisely through the multiplication of the mature seed yam by cutting it into smaller pieces, planting them, and thus turning the mature seed yam into several new yams. Furthermore an examination of the old Tongan moon calendar suggests that a certain phase of the agricultural cycle was strongly associated with the theme of multiplication. The Tongan calendar consisted of thirteen months the names of which primarily refer to yam cultivation. One of these months was named 'Ao'ao which may be translated as 'multiplying the heads'. The expert on Tongan traditions, Havili Hafoka who after World War 2 worked with Queen Salote to collect Tongan customs, described this month as the time to cut in several pieces the yams of the late crop for planting. Thus he explains the name of this month like this:

"The name of this month refers to the cutting of the seed-yam, as this is the beginning of the planting of the "large crop" ("ta'u lahi"), the planting of the early crop of yam is finished. In the cutting of a seed-yam a piece of yam cut off to be planted was called "the head", (the 'ao) of the piece of seed-yam (*konga pulopula*). This is the reason for the name of the month of "'Ao'ao". And there is a tale that it originated in the name of the seed yam of this month. (Havili Hafoka,nd)

Although we do know that Cook's July 'inasi took place in the very first days of a new moon, it is impossible to establish with certainty which Tongan moon that was. The moon of 'Ao'ao definitely started sometime in the period from June to August so there is in fact a good chance that Cook's 'inasi occurred at the very beginning of a Tongan month known as the 'moon of seed yam multiplication'.

This makes it quite reasonable to conclude that Cook's 'inasi was no ceremony of thanksgiving and not really a presentation of the first-fruit of the harvest-season, the *ututa'u*. Far from being a harvest festival it was a planting ritual in which emblematic representations and performative analogies were utilised to achieve growth. Bearing in mind this striking prominence of analogies that characterise the 'inasi that Cook described, we are perhaps better prepared to interpret the seemingly anomalous prominence of the twelve year old successor of the Tu'i Tonga.

First of all, I would suggest that it may miss an important point to say that particular attention was paid to this boy. Instead, the point is that particular emphasis was put on the **relationship** between the mature Tu'i Tonga and the young Tu'i Tonga to be. One of the best ways of making this relationship stand out would certainly be to bring the mature Tu'i Tonga and his young son together in an extraordinary fashion. In this perspective the ritual climax of their eating together a piece of roasted yam which has puzzled scholars may seem far less confounding. What was brought together in this act of communion was the sacred Tu'i Tonga, the young Tu'i Tonga to be and an extraordinary kind of yam known as the *kahokao*. In a ritual made up of performative analogies in which agricultural success is aimed for by anticipating a bountiful harvest, it seems sensible to regard this act of communion as another performative analogy anticipating regeneration. What is evoked in this act of communion is an analogy between the **relationship** of the Tu'i Tonga to his offspring and the **relationship** of the mature seed yam to the new yam crop.

The logic of this analogy may become clearer if we have a closer look at the extraordinary kind of yam that together with the extraordinary Tu'i Tonga and his successor plays the leading role in the 'inasi.

All sources agree that it was the *kahokao* yam which was presented in both the July and October 'inasi. This kind of yam according to Mariner stands out from other yams by: "being of a kind which admit of being planted sooner than others... (Mariner 1991:342). Modern Tongan farmers for their part emphasise the speed with which the *kahokao* grows and matures. What makes this yam

extraordinary is simply that it is perceived to have qualities allowing it to be planted and harvested before the rest of the yams. The crop of *kahokaho* yams is thus called the *tokamu'a* which means the 'preceding crop' or the 'crop that leads the way'. In contrast all other kinds of yam are referred to as the *tokamui* which means the 'following crop' or the 'crop that follows after'. The cycle of Tongan yam cultivation, in which the 'inasi' presentations must be understood as key events, seems really to have consisted of two interwoven cycles of planting and harvesting in which one particular kind of yam, the *kahokaho*, stands out as a sort of a pilot crop. It is this 'leadership' which makes the July presentation of tiny emblems of growth essential "to secure a bountiful harvest and the welfare of the country and the people." to borrow Botts formulation. If the relationship between the fast growing *kahokaho* and slower yams is a relationship between what leads the way and what follows in its wake, it would clearly justify a belief that the presentation of emblems of *kahokaho* would have growth promoting effects on the seed of the late yam crop that was about to be planted.

This brings us to the general significance of Tongan concepts of 'leading' and 'following'. And these concepts, as it turns out, seem to be quite fundamental to Tongan notions of natural growth as well as of social precedence. For instance, every growing plant has an end that 'leads the way', the *mu'a*, and an end that 'follows in its wake', the *mui*, and the essential qualities of the plant are perceived to be concentrated towards the 'preceding or leading end'. The 'preceding end' of the sugar-cane is described as its sweetest part. The 'preceding end' of the kava plant, supplying the culturally accepted intoxicant, is said to produce the strongest kava. The 'preceding end' of a tree used for building is described to have the hardest wood. Finally, pieces from the 'preceding end' of the mature *kahokaho* yam is considered to grow faster than pieces from the parts that follow after. According to contemporary Tongan farmers this makes it appropriate to distinguish pieces that come from the 'preceding end' (*kongamu'a*) of the seed-yam from those which 'follow after' (*kongaloto/kongamui*) and to plant them in separate rows. In this way the manner of growth is said to be made manifest in the sequence of growth in the different rows and thus it is said to produce a beautiful and well-ordered garden. It is not difficult to see that this mode of emphasizing the distribution of qualities in different plants make the essential quality of sugar-cane its sweetness (*melie*), that of kava its strength (*malohi/kona*) or that of the tree its hardness (*fefeka*). But what about the **kahokaho** yam? Its essential quality seems to be of a different order. The emphasis is not on any substantial quality but on the difference in reproductive speed or vitality of the preceding end and the parts of the yam which follow in its wake. The quality that appears to be emphasised then, is its vitality, its very capacity to regenerate. It is this capacity that makes it the *tokamu'a* or the 'crop that leads the way'.

The preceding end of plants is always closest to its root, its source, its foundation, its point of origin. The end that

leads the way is the oldest part of the plant and the reason for the existence of the parts which follow in its wake. Thus the broad base of the coconut palm for instance, is known by the term *tefito'iniu*, signifying 'basis' or 'reason' or 'cause of existence' as well as 'senior family head', while the crown is known as its tail-end, the *hiku'iniu*.

The orientation of the main beam of the Tongan House rung along the inside of the rooftop, the *to'ufufu*, may serve as an example of a characteristic analogy between the conceptualisation of the relationship between 'the preceding end' and 'the following end' produced by natural growth and notions of social precedence (see also Perminow 1997). Recalling the splendour of an old church on Kotu Island, a Tongan House which had almost lasted for a hundred years when a hurricane called Isaac blew it down in 1982, an old man of Kotu Island emphasised the symbolic significance of the *to'ufufu*. The main beam was all that remained of this Tongan House during my fieldwork on Kotu in 1992, and it was kept on the loft of the Meeting House of the Free Wesleyans. Building a Tongan House, he emphasised, it is important that the preceding end of the beam, the end closest to its base, is placed at the preceding end of the House itself so that it runs along from the leading *mu'a*-end of the house to the following *mui*-end where the entrance is. The position of the chief is the preceding end of the house directly beneath the preceding end of the central roof-beam. 'But how do you decide which end is the leading end?', I wondered. 'Does it mean that the central beam tapers off towards the *mui*-end?'. 'That is not important', I was assured. The point is that the preceding end of the beam has the hardest wood and that is how it is distinguished from the following end. In The Tongan House, then relationship between the preceding and following ends of what may be separated into three cognitive domains seem to be integrated or at least synchronised. The domain of what Maurice Bloch (Bloch, 1993), following Scot Atran (Atran, 1990), has called 'living kinds', the domain of 'manufactured kinds' and the social domain. The implications of such a synchronisation is that the social precedence of the chiefly position in the Tongan House in principle is similar to the natural precedence of the 'leading end' of the central roof-beam which defines the preceding end of the whole structure of the House. Clearly the principle which gives the hard, leading end of the tree its natural precedence is its relative closeness to the tree's point of origin, its root, which in turn makes the 'leading end' the cause of existence or reason of the softer following end. Similarly, then, the principle which gives the chief or leader his social precedence is his relative closeness to an origin point, in other words his seniority, which make him appear like the very cause of existence or reason of juniors that follow and which puts them forever in his debt.

Similarly I suggest that the relationship between the *kahokaho* yam as the 'preceding crop', the *tokamu'a*, and other kinds of yam as 'the following crop', the *tokamui*, is the relationship between the foundation and what rests on it, between the cause and what is caused by it. Thus the significance of the *kahokaho* yam is not that of its size or its perfection but rather that of being the yam

'leading the way' so that a multitude of different kinds of yams of the 'large yam crop' may 'follow after'. This gives the *kahokaho* yam extraordinary natural qualities which mirror the extraordinary social qualities of Tu'i Tonga himself: It **leads the way among yams** as Tu'i Tonga **leads the way among men**. The very name of the place where Cook observed the *'inasi*, and where scholars agree that all the *'inasi* ceremonies took place, indicates that this analogy is not at all far fetched. This place, of course, is simply named **Mu'a** meaning 'front' as opposed to 'back' as a category of space and 'before' or 'preceding' as opposed to 'after' and 'following' as a category of sequence. Like the 35 named Tu'i Tongas before him, Tu'i Tonga Paul'aho of Cook's *'inasi* held his position of social precedence because of his seniority in a sequence of first-born sons. Origin myths exist to show how this sequence started out from the union between the Sky-God 'Eitumatupu'a and a Tongan woman constituting an origin point or a source in the demigod 'Aho'eitu (see Mahina 1990; Gunson 1990). A first-born son is closer to the cause or foundation in the sense that he has come into existence before his younger siblings. When this simple difference between sons who are first-born and their younger brothers are added up over the generations some people retain a closeness to the origin point while most people wind up far removed from it. In principle then the qualification for being the Tu'i Tonga is that of having come into existence before others in a line of descendants that precedes others or leads the way from the original union between the Sky and the Earth. Like the coconut palm, the kava plant and the sugarcane where the best qualities are concentrated close to the point of origin, it is this closeness to the source, the reason, the final cause which constitutes the precedence of the Tu'i Tonga title.

I have argued that the *'inasi* 'tribute of young yams' was a planting ritual meant not only to express something but also to achieve something, to have practical agricultural consequences. Its ritual means were the presentation of images of multiplication and the evocation of analogies of regeneration as a relationship between that which leads the way and that which follows after. Thus the harvest that the planting was intended to produce was anticipated in the ritual.

At the outset I described the puzzlement that the attention paid to the son of the Tu'i Tonga in Cook's *'inasi* has caused. It appears to contradict Tonga notions about relations of patrilineal seniority where the father-son relation stands out as the prototype. By considering the wider context of yam cultivation and notions of natural growth, however, it seems not at all unreasonable to emphasise precisely the relationship between the 'mature' (*motu'a*) Tu'i Tonga and his son. On the contrary, it is precisely because it is a prototypical relationship between that which leads the way and that which follows after that this relationship has a job to do in the ritual task at hand. Far from being culturally inappropriate it is highly appropriate to evoke an analogy between this father-son relationship and the relationship between a 'mature seed yam' and the young yam one hopes it will produce. And, incidentally, the Tongan term for 'son' is the same as the term for a 'young yam' growing out of a

mature seed yam, namely *foha*.

The agricultural conditions that the *'inasi* was meant to produce and notions of natural growth provides a context in which the prominence of the twelve year old son of the Tu'i Tonga makes perfect sense. More importantly, perhaps, the exploration may help us to fathom the rationality by which Tongan commoners laboured to produce a surplus, supporting an "unproductive" chiefly class of persons. For analogies between relations and processes of the natural and social domains which are evoked in a ritual to achieve growth, at the same time must have contributed strongly to legitimise the institution of the Tu'i Tonga and to naturalise notions of social precedence in general. In routine acts of engaging the world by seeing, touching, tasting, cultivating and using its components, people learnt that the 'preceding end' of the plant which leads the way from the point of origin has the highest quality. The practice of yam cultivation told them that the *kahokaho* yam leads the way so that the rest of the crop may follow. So also the Tu'i Tonga whose title originates close to the source have the highest quality and **naturally** must lead the way for others to follow. When the principles of natural growth and social worth are conceptualised in this analogous manner, it must make the "practical engagement" (Ingold 1992) with components of the environment, a confirmation of the principles of social precedence. The anthropologist Maurice Bloch in "What goes without saying" (Bloch 1992) shows how among the Zafimaniry of Madagascar the mode of conceptualising the most fundamental truths about society and the most fundamental processes of nature are analogous. Like him then, I would emphasise the significance of what people learn about what is reasonable and right in a society while engaging with the material world. A long time ago the French anthropologist Maurice Godelier (Godelier 1978) pointed out that relationships of dominance and submission have two constitutive components, those of violence and consent. Of these, not violence but consent is the component that most effectively keep people submissive. The extraordinary respect commoners were obliged to pay to Tu'i Tonga and his chiefs and the extraordinary authority these were entitled to wield are striking features of pre-Christian Tonga, and I dare say features of many kinds of relations of authority even in contemporary Tonga. In order to understand the renown social privileges that the Tongan chiefs and king enjoyed it is first of all necessary to understand the willingness of people to consent to it. In trying to make new sense of Cook's *'inasi* in the wider context of notions about natural growth and cultivation a logic of precedence has been discovered that helps us understand this willingness. Let me conclude then by emphasising the obvious: Clearly, a consent to submission that is implied by the very truths of nature cannot easily be withheld.

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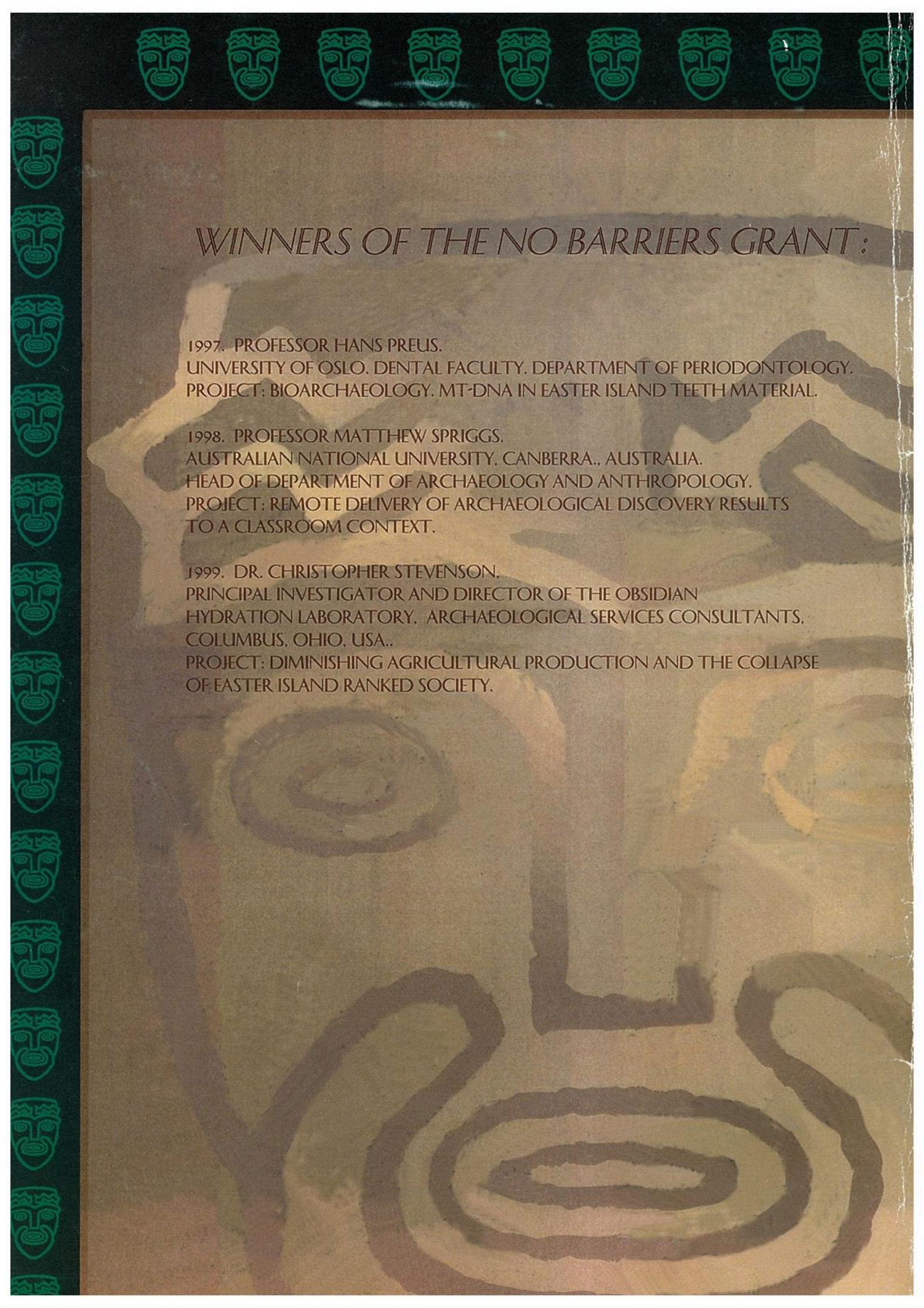
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