Archaeological Investigations at an Inland Rectangular House (Site 10-244), Easter Island

Christopher M. Stevenson, Ph.D.

Introduction
Recent investigations on Mangaia (Kirch 1993) and Hawai’i (Kirch 1982) have demonstrated that the human impacts on the island ecosystem are significant even within the first few centuries of settlement. Individual studies have revealed the degree of alteration by documenting a decline in the number of avian species (Steadman 1993a), the destruction of the indigenous forests, and the extinction of non-marine mollusks (Kirch 1982). On Easter Island, the evidence points to similar processes of deforestation (Fienley and King 1984), soil erosion and increasing aridity (Ayres 1975), and the extinction of avian species (Steadman 1993b).

The results of these long term processes are hypothesized to have had significant effects upon the organization of the agricultural and social systems of Easter Island. It has been proposed that a progressive environmental deterioration would have led to the need to increase productivity and sustain a surplus for elite personnel (Kirch 1984) over the long term through more effective management and allocation of resources. The consequence of a sustained stress on the system appears to have been an increase in the complexity of the chiefdom hierarchy and the manifestation of elite status in architecture (Stevenson 1984). It is also proposed that the intensification of the agricultural system would occur throughout the prehistoric sequence and would be manifested by the exploitation of marginal areas and the development of new technologies. The Maunga Tari region located in the central part of the island has been investigated with the purpose of examining subsistence methods and their changes over time within a changing environmental context.

Maunga Tari Archaeological Survey
In order to provide a regional context for the archaeological sites excavated in 1989 and 1992 a 1 km² area around Site 10-244 was resurveyed. Quadrangle 10 was originally surveyed and mapped by the University of Chile (Cristino et al. 1981) but information on site attributes was not included in the publication. Therefore, each site was revisited, described, and interpreted when possible.

Maunga Tari consists of a parasitic cinder cone with two small craters located in the central part of the island (Figure 1). The floors of the craters are currently dry but may have contained considerably more water in the past, at least on a seasonal basis. Settlement within a radius of approximately 1 km to the south of the cone is dense in comparison to the surrounding region which has fewer sites, many of which follow the course of shallow arroyos. The limited number of sites within the central part of the island and their tendency to be tethered to possibly seasonal water sources suggests that the area was resource-poor when compared to coastal regions.

An inventory of prehistoric sites within the immediate vicinity of Maunga Tari revealed a variety of agricultural and habitation features. Within the two craters numerous house terraces were located on the lower slopes and surrounded the crater floor which was encompassed by a large ring of stones. The crater floor most likely functioned as a large planting area. On the exterior slopes of the cinder cone six additional types of sites were recognized. The first was a small ahu located on the
northern crater rim. The second consisted of small house pavements with less than a dozen stones and no foundation while the third site type was a rectangular house and frontal pavement. Agricultural features consisted of either isolated or enclosed planting circles and stone alignments which served as possible water diversion features. The last type of site feature consisted of large surface concentration of stones which are proposed to represent open-field plantations.

Figure 1: The Maunga Tari Project Area with Prehistoric Site Locations (After Cristina et al. 1981)

Research Hypotheses 

Based upon the results of the archaeological survey within the Maunga Tari area and previous excavations, a series of research hypotheses were developed for evaluation within the context of information from Site 10-244.

Hypothesis #1. Site 10-244 represents a rectangular house which was repeatedly occupied on a short-term basis over many years. Earlier excavations and analyses by McCoy (1973) of a rectangular house (1-187) located near the rim of the Rano Kau crater led to the conclusion that this house form was used on a short-term and possibly seasonal basis. This was supported by the presence of a single house floor, the lack of deep trash middens, and a low number of simple flake tools. A similar site structure and lithic assemblage at Site 10-244 would suggest a similar pattern of usage.

Hypothesis #2: Site 10-244 was occupied late in the development of the chiefdom (1400 AD-1680 AD) and was not used after the period of societal transformation which occurred around 1680 AD. Radiocarbon dates from subsurface feature contexts at Site 10-241 indicated that the area around Maunga Tari was being utilized by the middle 1400's (Stevenson 1991). Obsidian hydration dates from the same site indicated that occupation of the site occurred between 1450 AD and 1680 AD. This is in contrast to McCoy's (1973) early date for the rectangular house on the slopes of Rano Kau which was radiocarbon dated to 770 AD ± 230 (uncorrected). It is proposed that the chronometric assays from Site 10-244 will occur prior to the latest part of the cultural sequence (pre-1680 AD).

Hypothesis #3: The occupants of Site 10-244 engaged almost exclusively in the planting, management, and harvesting of plants which may have included various forms of tubers and bananas. If true, it would be expected that accompanying a simple flake assemblage of expedient tools would be larger basalt tools such as hoes used in the tending of fields. These tool forms have been recovered from habitation sites nearer to the coast. Evidence of woodworking tools such as large adzes should be absent.

Hypothesis #4: The central part of the island in the vicinity of Maunga Tari was stripped of its primary forest by the 1500's. Pollen analysis by Flenley and King (1984) has shown that a palm forest was present on the island prior to human settlement and that deforestation in the area of Rano Kau had begun by at least 990 ± 70 years BP. Excavations in the area of Maunga Tari have identified the presence of several palm tree root casts; however they have not been correlated with cultural features or strata. It is likely that the central part of the island had been deforested by the 1500's and that this would be evidenced by the presence of plant remains within cultural features which are associated with secondary growth forest or a scrub forest environment.
Site Excavations

The objectives of the archaeological excavations included the documentation of site architecture, site stratigraphy, and the acquisition of a representative data set with which to evaluate the hypotheses presented above. In order to achieve these goals, excavations were directed toward the complete exposure of the house pavement and interior as well as a systematic sample of materials from the area in front of the structure. Test units were also placed within the hare umu located approximately 30 m south of the house. In all, a total of 41 two square meter test units were placed across the site area.

![Figure 2: Test Unit Locations at Site 10-244](image)

House Architecture

Site 10-244 appeared to represent what is commonly referred to as a rectangular house. Although many attributes of the site had been lost through destruction and scavenging of materials, sufficient indications remained with which to make a fairly reliable reconstruction.

Almost all of the foundation which defined the central enclosure of the house had been removed. However, a corner element composed of four paenga was identified in Test Unit S4 E10. The paenga were rectangularly shaped and fairly well crafted and had been set on edge to form the house foundation. None of the paenga found in situ contained cup depressions for superstructure posts. Three other paenga were partially or completely buried near the central area of the house. Two paenga were located in Test Unit S0 E8 and one in Test Unit S2 E8. One of the foundation stones in Test Unit S0 E8 had a single cup depression (6 cm in diameter) that would have held a house support.

The orientation of the in situ foundation stones indicated that the house was most likely rectangular in shape and may have been morphologically similar to numerous other rectangular houses found in upland locations. The size of the house enclosure was difficult to estimate however. Although the central area of the terrace around the foundation was relatively clean of large stones, straight and uninterrupted alignments could not be made between the paenga that were in original position and the three paenga that were thought to be near their original position. Despite this problem, the size of the house was estimated based upon the position of the in situ foundation stones and the size of the cleared central area. This estimate placed the length of the house at 3 m and the width at 2 meters.

![Figure 3: Scale Map of Site 10-244](image)

Loose Paenga

Distributed across the house area and at locations immediately downslope from the house pavement were numerous dressed foundation stones. During the course of excavation it appeared that not all of the paenga were of the same general dimension or material, and that the remains of several houses were present. As a result, all identifiable paenga and paenga fragments were collected. The broken foundation stones were refitted when possible. This resulted in the identification of twelve foundation stones. Two of the foundation stones were of the same form as those which defined the existing house foundation--thin, rectangular stones of soft grey basalt.

*Continued on page 38*...
A Sophora toromiro in the Exotic Botanical Garden of Menton (France)
Catherine Orliac

There is no longer any need to underline what the Sophora toromiro represents for the inhabitants of Easter Island. This small—almost mythical—legendary tree, said to be created by the gods but of which the pollen has been dated to 35,000 years, left the land of its ancestors more than 30 years ago. The descendants of the last Sophora toromiro, taken by the team of Thor Heyerdahl in 1956 at 300 meters inside Rano Kau, are grown today in Sweden and inside greenhouses of a few botanical gardens. The Pascuans still remember the recent attempts to reintroduce the Sophora toromiro by Bjorn Alden.

Fig. Mr. Alden, planting the Sophora toromiro, accompanied by Professor Monnier (Director of the Menton Botanical Garden), Professor Fabries (Director of the National Museum of Natural History), Professor Mora (Director of the MNHN Herbarium), Doctor Zizka (Curator of the Palmengarten, Frankfurt), Doctor Forment (Cinquantenaire Museum of Bruxelles), Professor Doumenge (Director of the Monaco Aquarium), the deputy Mayor of Menton and researchers from CNRS and MNHN. (Cliché L. Petit).

Mr. Alden planting the Sophora toromiro, accompanied by Professor Monnier (Director of the Menton Botanical Garden), Professor Fabries (Director of the National Museum of Natural History), Professor Mora (Director of the MNHN Herbarium, Doctor Zizka (Curator of the Palmengarten, Frankfort), Doctor Forment (Cinquantenaire Museum of Bruxelles), Professor Doumenge (Director of the Monaco Aquarium), the deputy Mayor of Menton and researchers from CNRS and MNHN. (Photo credit: Petit).

in 1988. Unfortunately this effort resulted in a failure due to a root nematode which killed the plants.

One of the principle aims of the Swedish botanical garden at the moment is to multiply toromiro by seeds and rooted cuttings in order to distribute and keep the tree in the most important botanical gardens in the world. The Göteborg garden is helped in this task by the Swedish University of Agriculture which works with a micro-propagation program (tissue culture). The Swedish researchers work together with German botanists and geneticists from the University of Bonn; a massive production of toromiro plants is thus taking place in Sweden and Germany.

Although only very few European botanical gardens have yet received toromiro plants, an informal cooperative group working with Sophora toromiro has been created in Europe. These scientists not only want to keep the species from extinction by multiplying the original plants, but are also trying to find a means of replanting toromiro on Easter Island. How can they fight the parasite (notably root nematode) and also produce strong trees capable of resisting a sub-tropical climate? A new step was taken on the 26th of March with the planting in France (at Menton in the south of France, on the seaside close to the Italian frontier line), of a strong little Sophora toromiro about sixty centimeters high. In fact, the Exotic Garden of Menton is going to be a European test garden for outdoor cultivation of toromiro. Sheltered from the cold north winds by the mountainous amphitheater which surrounds it, this garden has a microclimate which is ideal for the acclimatization of such plants. For the first time, the toromiro will live out in the open all year, in cool undergrowth near rose bushes and orchids, and facing the Mediterranean. Healthy resistant trees should be raised from this initiative, allowing for the return of this god one day to its native soil.

This special event, the appearance on French soil of a rare botanical specimen and a fascinating symbol of the past of Easter Island, provided researchers of the National Center of Scientific Research (CNRS) and the National Museum of Natural History (MNHN) with an opportunity to organize an exhibition around the ancient flora of this island, the history of this Sophora toromiro and the dramatic significance of the biological impoverishment of the island's environment. Until the beginning of September, an exhibition covering about 100 square meters will illustrate the history of the island and its actual climatic, geological, and floristic background. The first room of the exhibit accentuates Sophora toromiro and its unfortunate companions such as the Pascuan palm, Paschalococos dispera, and other endemic species which have now disappeared. The second room shows certain trees known by their pollen, their seeds, oral traditions and rare survivors of this ecological drama such as Triumfetta semitirloba and Thespesia populnea. Under the baleful gaze of the Polynesian rat (Rattus exulans), the methods of horticulture (in manavai) and food plants are also recorded; a few remarkable casts of statues carved from toromiro as well as Kau Rongo Rongo tablets give an almost magical human dimension that the presence of Orongo landscapes, animated by sea birds, renders
still more moving. This particularly up-to-date exhibition in a world where man modifies landscapes irreparably, where trees disappear from Pacific islands under the sad eyes of the god Tane, should give food for thought to more than one lover of Polynesia and Easter Island!


For more information, contact: Jardin Botanique Exotique de Menton, Val Rahmeh, Avenue St Jacques, 06500 Menton Garavan, France. Tel/Fax: 93.35 86.72.

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Placing Names: Maaori and Rapanui
Grant McCall
Centre for South Pacific Studies
The University of New South Wales, Australia

One of the most prominent Polynesian populations in the Pacific is the Maaori of Aotearoa, or New Zealand. Recent legislation enacted by a largely pakeha (European/outside) population has established an official policy of "bi-culturalism" in Aotearoa with Maaori names taking pride of place along with English ones. So, the names of all government institutions, ministries, statutory bodies, educational institutions and so on should have on their official documentation and publications (including street signs) Maaori equivalents.

In a rather tidy bit of authorship, journalist turned academic historian, Michael King, is the editor of two important collections about identity in Aotearoa. On the Maaori side, he has had several editions and printings of his landmark Te Ao Hurihuri. Aspects of Maoritanga, the most recent being 1992 (Auckland, Reed Books). The year before, he edited an equally provocative series of essays, Pakeha. The quest for identity in New Zealand (Auckland, Penguin Books (NZ) 1991).

Incidentally, neither the writer nor the editor has become addicted to typographical errors. Maaori is becoming the more accepted spelling in those situations, like this one, where the macron is difficult to add over long vowels. The 'a' in the usual spelling Maori is a long one.

For over two decades, Rapanui people have had direct contact with Maaori speakers and from the visit of a Rapanui song and dance group to Rotorua, New Zealand in 1972, those contacts have increased. Several Rapanui have had the opportunity to compare their language with that of the Maaori, often finding remarkable similarities, although easy conversation is difficult for most.

There are two Rapanui who live permanently in Aotearoa, with Mr. Jose Cardinali being the senior in length of residence and age. He and his wife (and two children) live on a small farm just outside Rotorua, in the community of Ngongotaha. Mr. Cardinali is a knowledgeable agriculturist, builder and skilled carver. He arrived in New Zealand two decades ago, moving subsequently to Sydney, Australia, for a time. In 1991 Mr. Cardinali returned to Aotearoa to take up his present rural life.

Juan "Riro" Riroroko Pacomio, a skilled carver and cultural expert, lives with his wife and daughter in Waitara. Mr. Riroroko, also known as "Poike", has a permanent position as a teacher of Maaori language in the Department of Maaori Studies at Taranaki Polytechnic in nearby New Plymouth. Mr. Riroroko learned his Maaori by living for a time in a very traditional community.

In February 1993, Mr. Urbano Edmunds Hey, one of the most senior Rapanui alive today, visited both Mr. Cardinali and Mr. Riroroko, discovering for himself the similarities and differences between Maaori and the language of Easter Island. It was Mr. Edmunds' opinion that the differences in speech heavily outweighed any similarities in written form. There was much delight in looking at maps with their frequent identical terms and, perhaps, meanings.

A look at any map of New Zealand will provide a number of place names that have meaning in Rapanui, including the rather ribald little town of Urenui. The curious Rapanui-phile can easily pass an afternoon looking up locations and place name meanings in a variety of sources, including the authoritative The New Zealand Guide (Dunedin, H. Wise & Co., 1952 and various editions) or A.W. Reed's Place names of New Zealand (Wellington, A.H. & A.W. Reed, 1975).

There are three names in particular that readers of the Journal will find interesting, as did Mr. Edmunds:

Hangaroa (38° 41'S 177° 36'E) is in Auckland province, a locality in Cook County, a district known for sheep raising, twenty-three miles south-west from Grisborne. There is also nearby the Hangaroa River (38° 50' 177° 31'E), which is an upper tributary of the Wairoa River, rising out of Lake Waikaremoana, also Auckland Province.

Moeroa (39° 27' 177° 31'E) is in Taranaki Province in the locality of Eltham County, thirty miles eastwards by road from Eltham.

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Mr. Urbano Edmunds Hey at Rapanui Stream.
Photo credit: Grant McCall.

Most representative of all is Rapanui (39° 53' 174° 57') as a place name. Most maps will show that it is a small farming
community in Wellington Province in Waitotara County, 7 miles eastwards from Wanganui, near the coast. There is also a Rapanui Road connecting it to Wanganui. Some distance north, along the main coast road to Auckland, there is the Rapanui Stream (38° 48' 174° 35'), featured, with Mr. Edmunds, in the photograph accompanying this brief note.

Before travel crazed diffusionists began spinning tales about Māori contact with Rapanui, it is worthwhile keeping in mind that these names are descriptive of the characteristics of their respective places, both on Rapanui and Aotearoa's north island. Moreover, both Rapanui and Māori are Eastern Polynesian languages, with Easter Island's tongue being the more ancient, having separated from its cousins about two thousand years ago.

Although the place names are all on Aotearoa's North Island, they cross ancient tribal boundary lines. And, in any case, the North Island in ancient times was favored for settlement always over the South one. This is the case still today.

In Edward Tregear's Comparative Māori Dictionary, first published in New Zealand in 1891, Hangaroa figures as a god brought from Hawaiki to New Zealand, while Moeroa and Rapanui are not specifically mentioned, although their nouns ("sleep" and "stern post of a canoe" respectively) are.

In the Seventh Edition of William's A dictionary of the Māori language (1971), which is the standard source, Hangaroa is defined as "some kind of sea-shells which were strung together and worn as an ornament around the neck". Moeroa is not mentioned, nor is Rapanui, although Rapanui, as with Tregear, are defined.

Finally, in contemporary Māori, (P.M. Ryan, The revised dictionary of modern Māori, Auckland, Heinemann Educational, 1989) Hanga carries the meaning, "the demeanor; habit; kitchen utensils". In common with its meaning in Rapanui, moe means sleep, so moeroa, long sleep. Another meaning of moe throughout Eastern Polynesia is "marriage". Rapa, still, means "canoe stern, blade of paddle".

If you, dear reader, are thinking that this is a rather sneaky way to revive the Rapa Nui or Rapanui debate, you are quite correct. Māori place names in Aotearoa are rendered with noun and adjective joined.

I, and several others, both historically and contemporaneously, think that this should be so for Rapanui. No one would think of writing the Māori name for New Zealand, Aotearoa, as Ao Tea Roa. Similarly, Rapanui should never be Rapa Nui.

Whilst for another story, it is worthwhile mentioning that the Rapanui version of the 1888 treaty of annexation signed between Chile and the island used the spelling Rapanui, as did the first French missionaries, Roussel, Eyraud and Escolan. Pity the Chileans did not continue the convention that they established when they first engaged officially with their oceanic territory.

Of course, each place in the world is special and Rapanui can continue to be so in its rendering of toponyms. It would be nice, though, if Rapanui joined the rest of the Pacific islands in how the names of places there are written.

Preparations are being made in Belgium for a scientific diving expedition to Easter Island which is to take place in the month of December, 1993. It is called "Expedition D.I.S. Rapa Nui 270". D.I.S. stands for "Diving Investigation Scientific" and the number 270 indicates that in January 1992, when the plan for this expedition was initiated, it was 270 years ago that Easter Island was discovered by Jacob Roggeveen on Easter Day.

The Honorary Committee that acts as patrons for the expedition includes King Baudoin of Belgium. Mr. Leendert Roggeveen, living descendant in the tenth line of Jacob Roggeveen; Dr. S.R. Fischer, vice-president of the Easter Island Foundation in Europe, and other authorities. There is also a scientific committee consisting of an archaeologist, a zoologist and an underwater researcher, it is assisted by scientific institutions such as: "L'Institut Royal des Sciences Naturelles de Belgique", "La Station des Recherches Sous-Marines de Calvi", Corsica (STARESO), and "La Ligue Francophone de Recherches et d'Activites Sous-marines de Belgique". The team that will go to Easter Island will be under the leadership of Georges Joris, a diver; Francois Dederen, editor of L'Echo de Rapa Nui (a newsletter published in Europe) will act as counselor. The team will include a geologist, two doctors, 3 archaeologists (of which one is an underwater archaeologist), two zoologists, an oceanographer, two biologists and twelve experienced scuba divers (of which four form the photographic and cinematographic team). In total, 24 persons.

The expedition has two separate programs: an archaeological and a biological one, and both have a submarine and a terrestrial part.

An Uncommon Guide to Easter Island is a unique guide to Rapa Nui and its archaeological sites. Maps, drawings, 110 full color photos, references, glossary and index.

By Georgia Lee, Ph.D.
"The best guide to Easter Island in print..." [South American Explorer]
"...it stands out in the guidebook field by the quality of its illustrations and the usefulness and clarity of its text" and, "...every single visitor to that very special island will find this truly uncommon guide to be an indispensable friend." [Paul Bahn, The Journal of the Polynesian Society]

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Preparations for Belgian Diving Expedition to Easter Island

A report from Herbert von Soher.

RNJ Correspondent in the Netherlands.

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Biology:
Up to now, only one underwater expedition has published results on Easter Island. The island's eccentric location in the Pacific and its extreme isolation result in a high degree of endemism, which will probably make further study rewarding. The biological team will concentrate on photographing and collecting echinoderms and the collection of mollusks. Attention will also be given to crabs, shrimps and anemones.

Also, very little study has been made on sponges, and one zoologist will dedicate himself entirely to the search for sponges, specially calcareous sponges. These sponges, with a skeleton containing calcium, formed a dominant group during the Paleozoic and were responsible for the formation of reefs, playing an important geological role. It was supposed that these primitive sponges were completely extinct, until about twenty years ago when some living specimens were found in the obscurity of caves in coral reefs where they secrete a massive calcareous skeleton. The probable existence of the 'sclerosponges' on the abundant fossil reefs around Easter Island will offer a unique possibility to study the biology of this group of animals. Sclerosponges have never been studied east of Tahiti. The objective of this study is to inventory these sponges in the submarine grottoes of Easter Island; their cellular organization will be studied under an electronic microscope on the spot. If possible, markers will be placed in order to be able to monitor their growth.

On land the study of spiders will be initiated. Recently the arachnofauna of the Galapagos Islands has been sampled intensively. The aim of the study is to find out whether or not what kind of relationship exists with Eastern Pacific volcanic islands such as Hawai'i, the Marquesas, etc. Since the Swedish Skottsberg expedition of 1916-17, nothing on spiders on Easter Island has been published, thus an update seems highly necessary.

Archaeology: During the last fifty years the archaeology of Easter Island has been thoroughly studied; there is only one field that has been neglected up to now: the subaquatic archaeology. Up to now only three expeditions have dedicated themselves to this aspect: Dumas in 1971, Ribera in 1975, and Cousteau in 1978. Unfortunately, very little was published about the results of these investigations.

The possibilities for this expedition to make a thorough submarine survey are limited: in the first place, its short duration of only three weeks, in combination with a high average of days with heavy seas not permitting any diving, seriously limits its scope. Secondly, the expedition will travel by plane and therefore will not have a ship of their own with a decompression chamber available. It will have to rely on local fishing boats to bring the divers to the diving site. This absence of a decompression chamber poses a severe limit on the diving possibilities in view of the safety of the divers. Therefore only experienced divers will participate and the two doctors who assist them will constantly be available.

The Dumas expedition has noted the presence of some umu-heaths at a depth of six to fifteen meters on the west and southwest coast of the island and carbonized wood has been found there. The object will be to collect this wood and date it by the carbon-14 method. Stereophotos will be taken of these areas.

The presence of submerged moai at the bottom of the seas has been noted by Easter Island fishermen. Five sites have been indicated where divers will try to locate them. In case of a discovery, a detailed inspection of the zone will be made and underwater photographs will be taken. The absence of a ship of proper size will not allow the lifting of heavy statues.

On-land notes made by Henri Lavachery in 1934 will be followed; he located seven statues partly covered by earth that were cut from a whitish stone which, in his opinion, were completely different from the volcanic tuff of Rano Raraku, the origin of all other moai. These moai will be sought and samples of this different type of material will be collected and analyzed.

Easter Islanders know a number of natural as well as artificial descents into the sea along the coast. The sites are known, but up to now no one has apparently considered if these might have been used for the transport of moai by sea. Investigations will be made on these sites in the light of this possibility, mainly for a possible study at a later date.

Additional Activities

Medical: Two doctors will accompany the expedition; their first task is the safety of the divers. The rough seas around Easter Island in combination with the absence of a decompression chamber give them a heavy responsibility. But they will also have time and medicine to spare for the local population. Therefore these will be offered to the local hospital as a gesture of goodwill to the population.

General: The leaders of the expedition well realize that a good collaboration with the Rapa Nui population will be an important factor for its success, and that this factor has been neglected by other expeditions in the past. Therefore collaboration has a high priority: prior information about all activities will be given and execution in perfect harmony will be sought with the Chilean authorities, with CONAF, and with the Consejo de los Ancianos. A member of the Consejo will be invited to come to Brussels in order to give advice before the expedition leaves.

The total budget for traveling costs, stay on the island, diving equipment, and photographic equipment and films is Belgium Francs 5.000.000 (which corresponds approximately with US $155,000.)

The Ceremonial Center of Orongo

by Alan Drake is now available from the Easter Island Foundation. This lavishly illustrated soft-cover book "...drews together material at present confined to the technical literature, much now out of print, in order to describe and explain the significance of Orongo..." (Peter Gathercole, Pacific Arts).

Only $12 (US) plus shipping & handling. Easter Island Foundation, 666 Dead Cat Alley, Woodland, CA 95695. Visa/Mastercard welcome.
LETTERS TO THE EDITOR

I am saddened to learn of the changes taking place on Rapa Nui because of the current movie being filmed there. Does not anyone (Rapa Nui elders where were you—out to lunch?) think of the future and the far-reaching impact of sudden wealth, work, and fame of the island and islanders. The immediate impact—work for all—is perhaps good. But the far-reaching consequences as stated in Vol. 7(1) of RNJ are not. The Rapanui are already foregoing farming and fishing with a possible change in life-style, increase in hard drugs, alcohol consumption, and prostitution.

The elders or whomever negotiated the contract-agreement with the film makers should have included clauses for post-move-concerns to include funds for the repair of damaged artifacts, both visible and those below the ground surface in the area of filming and related activities, as well as a large donation to the museum. And most importantly, a statement as to how they would return Rapa Nui to its pre-movie state.

I am glad to have visited the island before this major upheaval.

Betsy Hamel, Monroeville, Pennsylvania.

Finally I find some time to write in response to two articles you printed by Mr. von Saher from Holland.

It is unfortunate that Mr. von Saher mentions politics as the reason why the Twin Cities relationship had not worked. Is that his opinion, or was that actually a quote from a Dutch communal politician?

If so, the Dutch must have totally misunderstood the meaning of such a bond. What possible reason could the Dutch have considered when they thought the islanders were not worthy to be called brothers and sisters? Do they really believe Easter Islanders are responsible for whatever politics were/are decided in Valparaiso or Santiago? Does that mean islanders are favorable to President in Chile? Does that imply islanders are favorable to the Dutch, but am confident that there is an easy way to show where they must have been and where they most probably came ashore. In fact, I have prepared an article...in which I try to deduce from the given facts that the Dutch most probably anchored in front of Ahu Heki'i.

My sincere regards,
Christian Walter, Isla de Pascua

I have published a brief paper "On the Problem of Interpretation of the Rapanui 'Numerals'' (in Russian: K voprosu ob interpretatsii rapanuyskikh 'chislitel'nykh', Krasnodar: Kubanskij Kur'er, 1993. Abstract of the paper: I have analyzed Rapanui numerals (on the materials of the Gonzales' expedition). The investigation shows that the numerals give the entire text which is a prediction of the solar eclipse.

Sergei V. Rjabchikov, Krasnodar, Russia.

The eye of the beholder: Various impressions of a unique Easter Island petroglyph
Robert R. Koll

Of the 4000 petroglyphs on Easter Island recorded by Lee (1992), 375 birdman carvings are on the boulders at the ceremonial center of Orongo. One of them is unique because its design incorporates major elements of two different cult symbols: the birdman with its crouching man's body, and a Makemake head—but with a frigate bird beak alongside profile (fig.a). Several authors have commented on this unique petroglyph. However, there is a considerable difference in their interpretations.

Thomson (1891:fig.8, pg.482) sketched this rock, calling the design a "mythical animal". In his drawing, he overlooked the beak and described the figure has having claw-like hands and feet (fig.b). Thomson states: "Fishes and turtles appear frequently among the sculptures, but the most common figure is a mythical animal, half human in form, with bated back and long, claw-like legs and arms....The general outline of this figure rudely carved upon the rocks, bore a striking resemblance to the decoration on a piece of pottery I dug up in Peru....The form is nearly identical, but, except in this instance, no similarity was discovered between the relics of Easter Island and the coast of South America."

Out of all the amazing numbers of birdman petroglyphs at Orongo, Thomson elected to illustrate one that is distinctly different, and claimed it was representative of all the others.

Lavachery (1939:fig 330) called this motif "la vraie representation de Make Make, dieu d'Orongo" and suggested that it was a proof that Makemake and birdman were the same personage. Below the base of this boulder, Lavachery
Heyerdahl was on Easter Island for about six months in 1955-56. During that time, he must have visited the site at Orongo and seen the hundreds of birdman petroglyphs at this location. But he chose to ignore this physical evidence.

While participating in the Mulloy restoration at Orongo in 1974, the author made a copy of this petroglyph on cloth. For an hour or so, an elderly islander watched. When asked why this birdman figure had a Makemake face instead of the usual bird head, the islander explained, "This Makemake face is nothing other than the head of a frigate bird looking at it straight on."

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References


Heyerdahl's (1975:63) claim that this petroglyph represented a "feline animal" is based upon his use of Thomson's misinterpretation. He repeats Thomson's claim but skews its meaning by substituting "feline animal" for "mythical animal with claw-like legs and arms". Thus Heyerdahl bolstered his theory that Easter Island was populated by South Americans (where felines are found), not Polynesians. He adds, "Felines of any kind, and supreme gods with zoomorphic attributes, are unknown elsewhere in Polynesia, but in America from Mexico to ancient Peru including Tiahuanaco the artistic representation of the supreme god is a feline." It should be noted that Heyerdahl changed the meaning by using "feline" but found it convenient to not quote Thomson's last sentence in which he fails to find any similarity with South America.

excavated two more birdmen figures and he thought they were carved by the same hand and represented different phases of the birdman ceremony ("scène du sacré") (fig. c)

Figure a: Relief petroglyph of a birdman figure with a Makemake symbol for its head and a frigate bird beak alongside shown in profile. From a daubing on cloth by R. Koll, 1974. Size: 22x23 inches.

Figure b: Thomson's sketch showing his "mythical animal" apparently seated on a Makemake head.

Figure c: Lavachery's drawing of the same panel (1939:fig.330). Although he excavated at the base of this boulder he did not see (or at least did not draw) any face below the figure as is shown in Thomson's sketch.
The International Conference on Easter Island will be held in Laramie, Wyoming, August 3-6. Aside from the papers to be presented, there will be exhibits, a reception, typical Western events—and a native Rapanui *umu* with traditional dancing.

Fifty-seven papers have been scheduled. In the Archaeology section: F.R. Beardsley; F. Church & G. Ellis; G. Frison; O. Johansen; W. Liller; G. Orenci & A. Drusini; L. Shaw; A. Skjolsvold; D. Steadman; P. Vargas & C. Cristino; C. Stevenson; J. Van Tilburg; and P. Wallin. In the Art and Architecture section: T. Allen; W. Ayres; R. Budd; F. Forment; A. Kaeppler; H. Martinsson; P. McCoy; S. Millerstorm; G. Lee; S. Leng; C. Love; P. Pavel; W. Schuhmacher, and C. Walter. In the Historical section: T. Heyerdahl; C. Love and P. Bahn; S. Rapu; and C. Smith. In the Physical Anthropology section: S. Baker & G. Gill; P. Chapman & G. Gill; G. Gill; S. Hano & D. Owseley; D. Owseley & G. Gill. In the Ethnology and Linguistics section: H-M. Esen-Baur; S. Fischer; G. McCull; E. Mulloy; and W. Solheim. In the Natural Science section: M. Clark; A. Boven; M. de Dapper; P. de Pape; P. Langorhr & P. Pastels; J. Fenley; J. Grau; R. Gurley & W. Liller; C. Orliac; P. de Pape & I. Vergauwen. In the Organization and Conservation section: T. Allen; A.E. Charola; J. Hey; A. Hotus; J. Kurze & K. Sanger; and J.M. Ramirez. Countries represented at the Rendezvous are Norway, Sweden, Denmark, Germany, Belgium, France, England, Italy, Czech Republic, USA, Australia, New Zealand, Argentina, Easter Island (Chile), and continental Chile.

The conference will be opened by Easter Island’s Governor Jacobo Hey and Alcade Alberto Hotus.

Information or questions? Contact George Gill, Ph.D., Dept. of Anthropology, University of Wyoming, PO Box 3431, Laramie WY 82071. Fax: (307) 766-3700.

Accommodations? Call Laramie Inn: (800) 642-4212, or (307) 742-3721. Accommodations are also available at the University of Wyoming residence halls.

A special guided tour will follow the conference; it will visit Yellowstone-Grand Teton National Parks and will include magnificent Wyoming landscapes and geology as well as ancient archaeological sites. Be sure to make an early reservation for this unique trip.

An airport shuttle bus connects Laramie to Denver’s airport. Called “Airport Express”, their phone number is (303) 482-0505.

INTERNATIONAL NEWS

- **Spain**: From Spain comes the news of a photographic exhibition about Easter Island. From March 30 to April 30, the Spanish photographer Roberto de Armas exhibited in Madrid his collection of fifty pictures from Easter Island. Francisco Mellén Blanco provided the documentation and text for each picture, some of which are four meters high. Over 50,000 people visited this collection at the pavilion of the Royal Botanic Garden in Madrid. Roberto de Armas will exhibit his collection next June in the Canary Islands (Spain).

- **England**: A scathing denunciation in the London *Times* of the damage being done to the archaeology of Rapa Nui by various projects from the Japanese re-erection of Tongariki to the movie being filmed on the island. It is written by Bernard Levin—(see publications column) who asks, “Must men go to the ends of the earth and destroy the centuries-old mystery of a sacred place, just to make a vulgar film?” He cites, as part of the problem, hundreds of technicians and actors, people swarming over the petroglyphs at Orongo, inside Ana Kai Tangata’s cave, on the slopes of the quarry where a road now leads right up to the slopes, miles of electric cable, generators, scaffolding, air-conditioned trailers, portable kitchens and toilets, and a mountain of non-biodegradable garbage and litter. Levin asks “Why—when the idea was broached—was it not immediately thought an offence to god and man and whoever carved and raised and smashed the figures? Where is reverence? Where is belief? Where is the past? Where is even an understanding that there is such as thing as the past?”

- **United States**: The Whitney Biennial at New York’s Whitney Museum is exhibiting—as part of its new show—a huge...
plastic replica of an Easter Island moai that serves as the screen for TV clips. The statue is titled "Land of Projection" and was created by Bruce and Norman Yonemoto and T. Martin. According to Business Week (June 14, 1993), critics have been stomping all over the show in general, warning "if you scare easily, stay home."

As announced in Science News (Vol 143, No. 23:358), scientists have finally succeeded in synthesizing rapamycin, a complex chemical first isolated 20 years ago from a soil fungus found on Easter Island. Researchers have been eyeing this substance as a drug that would suppress the body's urge to reject transplanted organs or tissues. At Wyeth-Ayerst in Princeton, N.J., clinical trials of rapamycin—a 31-carbon ring structure—are being made. At present, the drug is being produced by fermentation using large batches of cultured fungus. It is hoped that a new synthesis technique creating improved versions of rapamycin will have different side effects, and will aid in probing the mechanisms of immunosuppression.

WHAT'S NEW IN POLYNESIA

Bikini: Return to Eneu? Scientists from the US now say it is safe for the Bikinians to return to Eneu Island, one of two major islands in the northern atoll. They were evacuated fourteen years ago due to high levels of radiation. Bikinians are skeptical. Only a short time ago, a scientific report to the US Congress said it was not safe to eat only local foods on the island due to the high levels of radioactive cesium 137 in the food crops.

The XVIII Pacific Science Congress will be held June 5-12, 1995, in Beijing, China. The central theme of the congress is Population, Resources and Environment: Prospects and Initiatives. For further information, contact XVIII Pacific Science Congress Secretariat, % Institute of Atmospheric Physics, Chinese Academy of Sciences, P.O. Box 2718, Beijing 100080, P.R. China. Fax: 86-1-2562458.

Tahiti: Thousands protested in French Polynesia, calling for the resignation of two politicians who are accused of corruption and abuse of position. Oscar Temaru, President of French Polynesia's largest separatist party led the demonstration which concluded by placing brooms in front of government offices as symbols of the need for a clean-up in the government.

Kaua'i, Hawai'i: Several Hawaiian groups have appealed to Governor John Waihee for a one year moratorium on rocket launchings from the Pacific Missile Range Facility at Mana, Kaua'i. They are also insisting on a full environmental impact statement on the ground hazard area.

Kaua'i is the site for a series of four rocket launches between Hawai'i and the Marshall Islands over the next ten years. [Pacific News Bulletin, Vol.8(3), 1993.]

The Indo-Pacific Prehistory Association meeting has been moved to Chiang Mai, Thailand. Dates: January 5-12, 1994.

HE RONGO HO'OU: WHAT'S NEW IN HANGAROA

Movie Business: On the 9th of March, it was announced on Chilean TV that the school children of Rapa Nui were refusing to attend school because of the movie. It was not clear if they just wanted to observe it being made, hoped to be in it, or were in fact, in the film. In El Mercurio (Valparaiso) for 15 March 1993, an article appeared in regard to the situation. The Ministry of Education was asked permission to postpone the opening of school because of the movie. The request was denied. The youngsters who have parts in the movie had to work on weekends or holidays.

Some Rapanui are restless as they think Hollywood should have paid more than six billion pesos (15 million dollars) for the right to tell the island's story.

There are at least three well-documented instances of damage to the archaeological sites by the film making. The island's judge has been asked to investigate. A house at Orongo collapsed as a result of too much weight being placed on the roof, and a section of a statue in Rano Raraku's quarry was broken off.

A collapsed house at Orongo with fake moai standing above it (and looking out to sea!!) A crane was brought into the site to raise these plastic and steel statues. Photo: Tricia Allen.

Concern is being expressed at the recent decision to film the battle of the Poike Ditch at Vai Atare, instead of using a ditch near Ovahe. The former site was nixed due to fear of grass fire in the National Park. Vai Atare, however, is certainly no less vulnerable.
Kevin Costner arrived to the island on 21 March, and was met at the airport by Governor Hey. He flew directly (in a private Gulfstream IV jet) from Guayquil, Ecuador. He was guided around the island by Edmundo Edwards.

- **Food shortages:** The island has been suffering from a lack of perishable food supplies due to the increase in production people associated with the movie. Jorge Ahlers, agent of the Supply Company for Isolated Zones (EMAZA), said there are shortages of chicken, beef, pork, cold cuts, yogurt, and fruit in general. The film makers have been taking up freight space on the LAN flights for their supplies which leaves little space for food items for islanders. Ahlers predicted that the island will experience a sharp recession following the filming owing to a drop in salaries. He noted that islanders now contracted as extras receive between 300 and 400 thousand pesos monthly.

One island store owner said his store was closed except for a few hours after the arrival of each plane. Supplies are immediately snapped up, and then there is nothing until the next plane. Local restaurants are having a hard time staying open, with no food to sell. Visitors to the island at the end of March tell of trying to get food in three different restaurants, but were told "manana"—after the plane comes in.

* Film crews from both Hawai'i Public TV and New Zealand TV have left for Rapa Nui to record damage to the archaeological sites as a direct result of the Costner film. Footage will be shown in Hawai'i on *Asia Today*.

- **Concern is growing over the disposition of the 30 huge plastic moai and other debris left over from the movie now that the Hollywood film crew leaves the island on 30 June.** It was originally announced that all such things would be removed from the island. Now it is said that a hole will be dug in the middle of the island and it will all be buried. The moai cannot be burned because this would generate toxic fumes. [What will this do to the soil in which they are buried? A toxic dump on Rapa Nui?]

- **Damage to several moai at Rano Raraku as a result of the filming has been documented.** One of the two statues lying prone in a sort of niche has had a section broken off near the shoulder of the figure. Others have been walked on to the point where severe erosion and exfoliation have occurred.

- **The storyline for the film is said to have undergone some changes.** Bahn and Flenley's excellent book, *Easter Island*, *Earth Island* has influenced the plot, which now has an ecological turn of events.

*Ecocide:* From Dr. Juan Grau, Secretary General of the Institute of Ecology in Chile, comes the following item, titled 'Ecocide in Rapa Nui' (*El Mercurio*).

When the producer Harry Osborne decided to make the movie "Rapa Nui", he said that the film was to be a prehistoric romance with "ecological touches". After having seen the movie *Dances with Wolves*, we imagined that the film would bring a significant increase in our knowledge of the island. We worried, nevertheless, that this true outdoor museum would be manipulated less than prudently.

Hundreds of persons are currently involved in the filming. The Pascuenses are very content to receive the river of dollars that the picture brings, but...not all are satisfied; several islanders have denounced that the "ecological touches" have been converted into ecological crashes. Thus, to imitate a scene in which a moai is raised onto an ahu, the producers required tree trunks to serve as rollers and levers, and nothing better than to resort to the few palm trees that were in the patios of the homes of Hangaroa and buy them, paying prices of up to US $720 for each one. These were taken out with a power shovel. After, all that was used were the trunks. When they wanted palms to give a Polynesian air to the scenery, they resorted to eucalyptus, covering the trunks with burlap cloth to simulate the trunks of palms.

* Cut palm trees lying along a newly built ramp at Rano Raraku for the film. Photo credit: Juan Grau.

In 1987, thanks to the owners of the Hacienda Cocolan and Lan Chile, we were able to send to the island 100 live shoots of the *Jubaea chilensis* of which no more than 30 have survived. Perhaps that is why we feel so strongly about what has
received an invitation to set up, on a temporary basis, the Mulloy Research Library in a room in their archaeological and anthropological museum. If two rooms in the back garden become available—they are currently occupied by Viña del Mar's Traffic Department—we may, if we wish, use them instead. A basement room has also been provided.

Book cases and other furniture are now being built and bought, and prospects are excellent that a part-time librarian—a Rapa Nui now living in nearby Quillpué—will begin work before the end of June.

A Chilean Rapanuiophile known to many of the EIF staff, Mrs. Rose Marie Wallace, has graciously and enthusiastically volunteered to inventory and help catalogue the books and papers of the Mulloy collection which formerly were in storage in the home of Sr. Gonzalo Figueroa. The collection has been moved to Viña del Mar.

We again repeat the appeal made in the last issue of RNJ for gifts to the Foundation of basic library equipment. A 386-level personal computer, a copy machine, and a fax are all very much needed, and any donations of this or any other equipment or funds to buy it would be most gratefully received.

Easter Island Foundation/Fundación Rapa Nui
666 Dead Cat Alley, Woodland, CA 95695.

PUBLICATIONS


Rjaabchikov, Sergei V. 1993. Tayny ostrova Paskhi (The mysteries of Easter Island) Vol.2. This book is written in Russian. The author (who describes himself as an 'independent expert'), has requested we publish the chapter headings in English: "Reading of the fragments of the hieroglyphic texts", "Text 'Hã Timo'", "Origin of names of the Rapanui tribes", "Text 'Creation of the Universe' in the tablet Keiti", "Brief records in the Rapanui artifacts", "Peruvian-Rapanui glossary", "Interpretation of Easter Island placenames", "On alternation of the glyphs 'Fish' and 'Tuna' in the Mamari calendar".


Archaeological Investigations, continued from page 27.....

The other foundation stones exhibited a range of basalt types with differences in color, hardness, and vesicle size. Several of the hard, finely crafted paenga were reminiscent of paenga that occurred at house sites along the coast. The significance of this accumulation of distinct paenga types from different locations was not readily discernable. While reutilization of paenga as building materials is frequently observed throughout the island the meaning of their occurrence at Site 10-244 is not clear. It is possible that they may have been intended for reworking or they may have had a spiritual or economic value.

Plate 1: Overview of Site 10-244 after Excavation

House Pavement

Most of the artificial terrace was occupied by the house pavement (Plate 1) which was constructed of crude, flat basalt stones placed closely together on the surface of the ground. None of the stones exhibited undisputable signs of intentional shaping. Much of the pavement was intact and surrounded the central house area on three sides. During the course of excavation several small basalt pebbles were found between the stones. Although their occurrence was limited, it did suggest that some portions of the pavement may have had decorative pebbles placed between the larger stones. A large number of stones belonging to the pavement were found downslope from the house terrace.

A small number (n=3) of large poro were found close to the remaining segment of the house foundation. Although probably not in original position, they may have once been associated with the entrance to the house.

X Spend a week on Easter Island and see the famous Tapati Rapa Nui—the annual Easter Island festival. Each February the rapa nui celebrate with dance, song, parade, competitions—and fun. In Polynesian costumes they perform centuries old dances of their ancestors and re-enact ancient rites.

Far Horizons proudly offers an in-depth trip to Easter Island at the time of the festival, led by archeologist Georgia Lee. Optional side trip to Northern Chile available. For further information, contact Far Horizons, P.O.Box 91900, Albuquerque NM 87199-1900 or call: (800) 552-4575.
Lithic Analysis

An analysis of the lithic assemblage from Site 10-244 followed the procedures presented by Stevenson et al. (1984). In that study complete flakes were classified according to size ranges and the distribution of cortex on the dorsal surface and flake striking platform. Three flakes types were defined— a) primary flakes: where cortex was present on the striking platform and dorsal surface, b) secondary flakes: where cortex may be present on the striking platform or a portion of the dorsal surface, and c) tertiary flakes: where no cortex remained on the flake platform or dorsal surface. Each flake category was then subdivided by size: 0-2 cm; 2.1 cm - 5.0 cm, and greater than 5.0 cm.

The excavations at Site 10-244 recovered 245 complete obsidian flakes and 311 flake fragments. The complete flakes were classified according to type and size. An inspection of Table 1 and Table 2 provided some insight into the nature of lithic reduction activities at the site.

Within the assemblage tertiary flakes were numerically dominant and constituted 78% of the assemblage while secondary flakes made up 18% (Table 1).

<table>
<thead>
<tr>
<th>Size Range</th>
<th>Primary</th>
<th>Secondary</th>
<th>Tertiary</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-2 cm</td>
<td>&lt;1% (1)</td>
<td>3% (7)</td>
<td>39% (95)</td>
</tr>
<tr>
<td>2.1-5 cm</td>
<td>3% (7)</td>
<td>14% (35)</td>
<td>38% (92)</td>
</tr>
<tr>
<td>5+ cm</td>
<td>&lt;1% (2)</td>
<td>&lt;1% (2)</td>
<td>2% (4)</td>
</tr>
<tr>
<td></td>
<td>4% (10)</td>
<td>18% (44)</td>
<td>79% (191)</td>
</tr>
</tbody>
</table>

Table 1: Flake Size Percentages by Flake Type

Primary flakes were the least prevalent at 4% of the total number of flakes. Within each flake category the distribution of flakes showed considerable variation (Table 2).

<table>
<thead>
<tr>
<th>Size Range</th>
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<th>Tertiary</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-2 cm</td>
<td>10% (1)</td>
<td>16% (7)</td>
<td>50% (95)</td>
</tr>
<tr>
<td>2.1-5 cm</td>
<td>70% (7)</td>
<td>80% (35)</td>
<td>48% (92)</td>
</tr>
<tr>
<td>5+ cm</td>
<td>20% (2)</td>
<td>4% (2)</td>
<td>2% (4)</td>
</tr>
<tr>
<td></td>
<td>100% (10)</td>
<td>100% (44)</td>
<td>100% (191)</td>
</tr>
</tbody>
</table>

Table 2: Flake Type Percentages by Flake Size

Primary flakes and secondary flakes in the 2.1 cm - 5.0 cm range dominated this artifact size range. The frequency of flakes in the larger and smaller categories were considerably fewer. For tertiary flakes, very few were greater than 5.0 cm. However, occurrences of this flake type were evenly split between the 0 cm - 2cm and 2.1 cm - 5.0 cm size categories.

The presence of few primary flakes in all size classes suggested that the production of large flakes was not frequently conducted and that large block cores were not transported to the site for reduction. However, a restricted amount of lithic reduction appears to have taken place as suggested by the occurrence of a large number of secondary flakes in the 2.1 cm - 5.0 cm range coupled with the dominance of tertiary flakes of this size and smaller. This pattern suggested that small prepared cores were being transported to the site for the production of flakes. This interpretation of the reduction sequence was also supported by the discovery of three small exhausted discoidal cores and numerous core fragments.

Numerous mata'a were also found and consisted of four complete specimens, 10 blade elements without stems, and 6 stem fragments. These tools were once hafted and probably functioned as a general purpose cutting or scraping tool.

Pecked/Ground Stone Technology

A variety of basalt tool forms were recovered from surface and excavation contexts. The most frequently occurring tool form consisted of basalt "pounders" (Plate 2). Four of these tools were found in the vicinity of the house (N15E0, S0E10, S2E8, S10E6). These tools consisted of rectangular pieces of heavy, vesicular, grey basalt. The ends of the pounders were flat and did not show indications of damage. The sides tended to be slightly concave or convex. On two complete specimens, small shallow grooves had been pecked onto each side. These grooves were interpreted to represent the location where a handle had been hafted. Determining the exact function of this tool was difficult but the presence of a right angle haft, flat ends, and high mass indicated that they were probably used to pulverize vegetal materials. This is supported by the lack of damage on the working end of the tool. If another stone was being worked then evidence of battering would have tended to be more evident.

Several small basalt hoes were also recovered. The best example consisted of an extensively worked, scapula-shaped tool from the surface of S20 E10. Manufactured from a large flake of dense, light grey basalt, the ventral surface was pecked smooth and possessed a rounded leading and side edge. The lower half of the dorsal surface was also pecked flat while the upper portion was unmodified. Two small flake scars along one side may have represented the location of a haft. The other side edge of the tool had snapped off and the location of a hafting notch could not be determined. The second hoe was of the same general proportions but exhibited very little surface dressing.

Two basalt adzes were identified during excavation. The first adze or toki was recovered from Test Unit 00 E12. It consisted
of dense, non-vesicular basalt that had been shaped by transverse and lateral flaking. The working bit had been formed through the removal of a single large flake thereby leaving an acutely angled edge. The butt of the tool was slightly rounded and narrower in width than the working end. The second adze was recovered from Test Unit S4 E10 and was also manufactured by flaking non-vesicular dark grey basalt. In contrast to the first adze, this specimen possessed a rounded working bit rather than an acute angled cutting bit. The other end of the tool was flat and showed no evidence of modification. Ridges along both edges of the tool showed evidence of extensive grinding and most likely represented the location of the handlehaft.

Other Tool Forms
A total of six small hammerstones were recovered from surface and subsurface contexts. All of the tools consisted of flat or rounded sea pebbles of a hard, dense basalt of which five showed evidence of battering at one or more locations. These tools were presumed to have been used in the reduction of obsidian flake cores.

A thumbnail scraper was recovered from Test Unit S4 E10. It had a steep angled working bit and sides which tapered toward the rear of the tool. Each side was heavily ground which suggested that it may have been once hafted. The total length of the tool was only 2.3 cm, however, the presence of a bulb of percussion at the rear of the tool suggested that the specimen was not broken.

Subsurface Artifact Distributions
The distribution of subsurface flakes and flake fragments were studied to help determine if localized activity areas were present. The raw artifact counts from each test unit were entered into the SURFER mapping program and a contour map of the counts was produced (Figure 4). This indicated that the highest artifact counts were within the area of the house foundation and pavement. A second concentration of materials occurred immediately in front of the house pavement on the downslope side and a cluster of materials was present to the west of the house near coordinates S4 E0. Artifact counts located at distances greater than 8 m from the house were low. In these areas there were usually less than 12 artifacts per test unit.

The subsurface distribution of artifacts generally corresponded with the surface distribution of obsidian. As with the subsurface map there was a concentration of artifacts on the house and downslope from the pavement. The surface concentrations in the vicinity of S10 E20 and S16 E2 were not supported by the subsurface investigations. Similarly, the subsurface concentration of obsidian located to the west of the house was not reflected in the surface distribution. It therefore appears that in contexts where downslope soil movement has been significant that only the greatest subsurface concentrations will be identified by the surface collection. It is also likely that smaller surface clusters of artifacts will not indicate subsurface deposits and as a result are likely to be behaviorally insignificant.

Obsidian Hydration Dating
An obsidian hydration rate at 160°C (1.69 um^2/day) and the activation energy (86500 J/mol) have been developed for the Orito obsidian source under conditions of 100% relative humidity. With these constants the high temperature hydration rate may be extrapolated to known ambient conditions. In 1989, soil temperature and soil relative humidity cells were buried at Site 10-241 located approximately 200 m to the west of Site 10-244. These monitors recorded an effective hydration temperature of 22.15°C at a depth of 10 cm and a soil relative humidity of 96%. This resulted in a hydration rate of 7.3 um^2/1000 years which was used to convert the hydration rim width measurements on individual artifacts to years before present.

Obsidian samples were selected from feature and stratigraphic contexts throughout the site area (Table 3). It was attempted to obtain three samples per context where possible. However, in some cases only single specimens were available. A total of 41 samples were dated. An inspection of the measurements

![Figure 4: Distribution of Obsidian Subsurface Artifacts](image-url)
(Table 3) showed that the rims ranged from 0.9 to 1.89 um. However, the vast majority were between 1.30 um and 1.86 um and indicated that the site occupation spanned the period between 1718 AD and 1476 AD. The two very small hydration rims that produced dates of 1839 AD and 1815 AD represented a very late and probably short visit to the site area. Also of interest was the high frequency of rim values of approximately 1.3 um. This suggested that many of the features were created around 1700 AD and that the site was the most intensively utilized at this period in time.

Feature Analysis
The classes of subsurface features discovered at Site 10-244 included posts, small hearths, *umu* and rakeout middens, tuber casts, and palm tree root casts. No deep pits, organically rich middens, or large hearths were encountered and it is unlikely that they existed given the large systematic sample (64 m²) that was excavated in front of the house pavement.

A total of 7 posts were found in association with the house pavement. The posts were consistently shallow (1-5 cm) in depth and possessed rounded bottoms. No alignments or interpretable configurations could be identified. However, the shallow remains suggested that the posts probably did not support a major structure or feature bearing a significant weight load. Small hearths were the most numerous feature types at Site 10-244. In profile they consisted of shallow 'vee' shaped pits with a depth usually not in excess of 25 cm. The matrix characteristically consisted of a dark, carbon rich soil containing lenses or flecks of red, burned earth. The nearly complete absence of larger carbon fragments indicates that the fuel size was small and that complete combustion had frequently occurred. No bones of chicken, rat, or fish were encountered during excavation or flotation. A single larger hearth (Feature 13) was found in the center of the *hare umu* located south of the house. No *umu* was present and it hypothesized that the semicircular alignment that formed the feature represented the location of a former windbreak for the hearth. Unfortunately, no posts were found in association with the alignment.

Two larger cooking features were discovered on the house terrace to the rear of the pavement (Figure 3). It was determined through excavation that Feature 20 was initially constructed inside the house foundation as a storage feature and was not fire-related. It consisted of a deep (38 cm) basin shaped pit that was defined on the surface by five dressed stones set on edge. At a later date during the reuse of the house the feature was partially filled with clean soil and used as an *umu paie*. A large rakeout midden of burned soil and carbonized earth was associated with the pit. Feature 37 was a similar feature also located to the rear of the pavement. While it was associated with a large rakeout midden, stones were not used to define the cooking feature. The distribution of the rakeout middens from each feature within or immediately adjacent to the reconstructed house foundation suggested that a foundation and thatch structure were probably not present.

An unexpected find was the presence of tuber casts located downslope (south) of the house pavement. Most of these casts consisted of small, steeply sided, 'vee' shaped impressions that reached an average depth of approximately 10 cm. A single larger cast that reached a depth of 31 cm was also encountered. These features could not be dated, nor the plant forms identified, but they do represent the former presence of a garden.

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Table 3: Obsidian Hydration Dates for Site 10-244
(* standard deviation)

Two palm root casts were also identified in Test Unit S2 E14 and Test Unit S10 E2. Feature 32 (Test Unit S2 E14) was the
clearest example. It consisted of small, tightly spaced vertical root casts each of which had a diameter of less than 1 cm. Unfortunately it could not be determined if the tree was alive at the time of site occupation.

The relative ordering of rim measurements was also used to examine the order of appearance of cultural features at Site 10-244 (Table 4). The range of rim values was arbitrarily divided into three periods (early, middle, late) with each period consisting of two tenths of a micron. Each dated feature was then placed into one of the periods. In this analysis the smallest rim measurement from a context determined its place in the sequence. A review of Table 4 showed that the hearths were the most numerous during the later portion of site occupation.

Late Period Features (1.3 - 1.4 µm)
- Fea. 20 - Umu
- Fea. 13 - Hare Umu
- Fea. 22 - Hearth
- Fea. 23 - Hearth
- Fea. 26 - Hearth
- Fea. 28 - Hearth
- Fea. 29 - Rakeout Midden Above Burn Layer

Middle Period Features (1.5 - 1.6 µm)
- Fea. 6 - Hearth
- Fea. 8 - Midden
- Fea. 35 - Hearth

Early Period Features (1.7 - 1.8 µm)
- Fea. 34 - Hearth Below Burn Layer

Table 4: Relative Age of Features at Site 10-244

Botanical Analysis
Charred botanical remains were recovered from subsurface feature matrices using water flotation methods. A few morphologically distinct samples from pit features at 10-244 were submitted for analysis as were selected samples from nearby site 10-241.

Four different types of plant remains were identified. Palm endocarp and palm 'wood' were identified in Feature 20, Site 10-241, a thick strata of burned, carbon stained soil. In Feature 40 from the same site endocarp fragments were identified as those from the extinct Easter Island palm *Paschalococos dispersa* also at Site 10-241, Feature 26, possible parts of rhizomes from the family *Cyperaceae* or *Poaceae* (sedges or grasses) were identified. The same type of specimen was also encountered at Site 10-244, Feature 13.

Two additional types of remains were found exclusively at Site 10-244. Within Feature 22 a charred fruit with a seemingly persistent calyx was found. This attribute is typical for *Myrtaceae*. In many settings Murtlewood is found as a small shrub. Drupes from the family *Loganiaceae*, genera *Neuverburgia* or *Fagraea* were encountered in Feature 22 classified as a small hearth. Throughout the Pacific a variety of species are found and occur as shrubs or trees (2-30 m in height) in dense or secondary growth forest, or in patches of forest in open country. Unfortunately at this time the environmental context of this sample cannot be more precisely characterized.

Conclusions
The program of archaeological survey and excavation in the area of Maunga Tari indicated that this locality was the location of a religious shrine and intensive agricultural production. A small *ahu* and 2 m high statue located on the rim of the eastern-most crater indicated that the area held some form of religious significance. The presence of a variety of other habitation and agricultural features such as open field systems, planting circles, possible water diversion alignments, house pavements, and platforms suggests that a number of crop production techniques and crops were produced. The current radiocarbon and obsidian hydration dates suggested that activity in the area of Maunga Tari occurred between the middle 1400's and the early 1700's.

It is proposed that the location of settlements in this central section of the island was in large part determined by the occurrence of water sources. Today, the two craters at Maunga Tari contain a dense grass at the bottom which is indicative of a moister environment and it is likely that the craters retained greater amounts of water in the past. The numerous terraces, platforms, and alignments indicated that crops were probably grown in the base of the craters which functioned like large *mahava*. It is possible that the craters could have been used to provide water for hand irrigation of some open field plants. The water tethered settlement pattern is also evidenced by the distribution of other sites in the region (Figure 1). Sites 10-258, 10-259, 10-260, 10-228, 10-229, 10-227, and 10-226 parallel a small arroyo that was confirmed through field survey.

The initial activity in the vicinity of Maunga Tari probably centered around the cutting of palm trees but the testing program to date has not revealed sites or lithic assemblages indicative of woodworking activity. Our evidence for the first occupation of the area comes from the radiocarbon dates from Site 10-241 (Stevenson 1991) and the earliest obsidian hydration dates from 10-244. Both of these dating methods have produced dates which occur in the middle to late 1400's.

Site 10-241 was probably a processing and storage locality, however, the initial use of Site 10-244 does not appear to have been directly connected with agriculture. The reconstruction of the site based upon the remaining evidence suggested that Site 10-244 was originally a rectangular thatch structure with a dressed stone foundation. Contained within the house was deep storage facility also outlined by a circle of dressed stones. To the front and sides of the house was a pavement of closely spaced flat basalt stones that were not obviously modified or shaped. A few larger *poro* may have been placed to define the entrance to the structure. This pavement covered most of the flat terrace area which had been cut into the slope of Maunga Tari.

These features indicated that the construction of Site 10-244 required a significant investment in time and materials. The
poro were acquired at the coast and transported several kilometers inland. Although the paenga were cut and dressed like many sites located near the coast, they appear to have been made from a softer, locally available materials and not the fine, hard basalt characteristic of coastal hare paenga. An additional investment in labor was required to excavate the terrace upon which the house was placed. The magnitude of this investment is heightened when compared to the architecture of Site 10-241 which consisted simply of an accumulation of crude, flat stones placed together on the slope of Maunga Tari. A foundation and coastal poro were noticeably absent.

This investment in architecture suggested that the rectangular house was associated with the ahu (Site 10-246) located approximately 150 m to the northeast. The occupation of the house for religious purposes is supported by the absence of cooking facilities such as umu and the presence of a storage facility within the house, possibly for personal possessions or prepared foods. A few small hearths may have been in use at the time, but the absence of large pit features or associated domestic architecture suggested that Site 10-244 was not a domestic residence and was occupied by priests and other religious personnel. To bolster this interpretation dates from the ahu will be required to determine if the structures were built near the same time period.

The duration of use as a chiefly residence cannot be determined with certainty. The obsidian hydration dates indicated at least some occupation and discard of artifacts throughout the 16th century. This is the pattern that would be expected for a settlement of this type: periodic visitation to perform the necessary ritual followed by a period of abandonment. This pattern may also have been of a seasonal nature. What is clear, however, is the presence of a second and functionally different type of occupation that begins in the middle 1600's and extends into the early 1700's.

Occupations at the site during this later period are hypothesized to have been of a limited duration for agricultural task groups periodically coming to the Maunga Tari area. The short, repeated use of the site was evidenced by the occurrence of numerous small surface hearths that date to the second occupation. Such fires may have been build for the shortest of stays while the cooking ovens were used for longer occupations which may have spanned several weeks or more. The absence of a deep midden and food remains argues for periodic use and supports Hypothesis 1. However, much of the required subsistence may have been obtained from the gardens. These resources would leave few recognizable remains. The lack of preserved plant remains also prevents any firm statements concerning the seasonality of site use, if any. It is possible that Site 10-244 was visited as needed by communities living closer to the coast.

The second occupation clearly reflects the rearrangement and reuse of site materials without new investment in architectural features, a pattern typical of late period occupation at other locations on the island (McCoy 1976). At this time the house foundation was removed and the storage feature reutilized as an umu pae. A second cooking oven was also located in the area near to the former house interior. The presence of these features led to the proposition that a thatch structure was not present and that the pavement and terrace functioned only as a living surface. Although our sample of obsidian dates was not a random one, the largest number of dates occurred during the late 1600's. This confirms Hypothesis 2 which proposed that the occupation of the house terminated near the period of societal change.

If our interpretation of the initial site as a priestly residence use is correct, it would imply that the majority of the lithic and ground stone assemblage belongs to the second occupation. Ritual activities occurring over short periods would probably not require the variety of tool forms recovered from Site 10-244. These tools included small adzes and hoes which would have been instrumental in cultivation and harvesting. Ritual activities would tend not to produce large amounts of obsidian debitage as was found to the rear and in front of the pavement. An analysis of this assemblage suggested that smaller sized flakes were being produced from prepared flake cores that were transported to the site area. These data in conjunction with the documented settlement pattern support Hypotheses 3: that Maunga Tari was an area devoted to agricultural production.

The small and selectively sampled data set of charred botanical remains permits only the most tentative statements concerning the prehistoric vegetation within the project area. Endocarp and palm 'wood' remains suggested that these trees were present although maybe not in great supply. However, the presence of the murtlewood shrub and trees or shrubs from the genera Neuhurbia could indicate a more open secondary growth forest. Thus, the current data does not strongly support Hypothesis 4 and indicates that some portion of the original palm forest may have still existed during the occupation of Site 10-244.

References


Steadman, D. 1993a Stratigraphy and Chronology of Avian Extinction in Eastern Polynesia. Paper Presented at the 58th
Acknowledgements

The 1992 archaeological field season was funded by Earthwatch, Watertown, Massachusetts, USA. Through their efforts numerous volunteers were able to visit Easter Island and participate on this scientific project. We are grateful to members of the Consejo de Monumentos Nacionales, Santiago, Chile, especially Sr. Sergio Villalobos, Executive Vice-president, Sr. Carlos Aldunate, and Sr. Daniel Quiroz. We also extend our sincere appreciation to Sr. Gonzalo Figueroa and Dr. William Liller for their assistance during all phases of the project. The Museo Sociedad Fonck provided institutional support for this project. On the island, assistance was provided by Sr. Jacobo Hey, Governor, Sr. Alfredo Pate, Acting Governor, and Sr. Alberto Hotus, Mayor. To our support staff we are also very grateful. Raphael Rapu provided us with transportation and assistance. Dr. George Zizka and Mr. Bjorn Alden provided identification of the charred botanical remains.

Christopher Stevenson, Ph.D.;
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4620 Indianola Ave. Columbus, Ohio 43214

Friar Francisco (Pancho) Nahoe, OFM Conv., grandson of Emilly Ross Mulloy and the late Dr. William Mulloy, was ordained a deacon in the Roman Catholic Church April 17 in Rome, Italy. The ceremony, in which 11 Franciscan friars were ordained, was held in the parish church of San Gregorio Barbaarigo on Via Laurentina in Rome. The Franciscan Order was founded in 1209 A.D. by Saint Francis of Assisi. Friar Francisco will complete his theological studies in Rome and then return to California where he will teach at a Catholic High School in Los Angeles.

From September 29 through November 18th, 1993, an Earthwatch research team under the direction of Dr. Christopher M. Stevenson (Archaeological Services Inc.) and Sr. Josué Miguel Ramirez (CONAF) will conduct archaeological excavations in the vicinity of Maunga Tari, Easter Island. Research objectives for this year include the investigation of a number of agricultural features such as planting circles, stone alignments, and house pavements in order to determine prehistoric function and temporal period of use.

Persons interested in participating may contact:
Earthwatch, 680 Mount Auburn St., Watertown MA 02272.
Phone: (617) 926-8200.