Easter Island Statue Project
Conservation Initiative

The Explorers Club

Easter Island Statue Project

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Explorers Club Flag #50 Report

Easter Island Statue Project Conservation Initiative Field Season IV

July 7 to August 3, 2011

Jo Anne Van Tilburg, Ph.D.

Location

Rano Raraku Quarry
Rapa Nui National Park
Easter Island (Rapa Nui), Chile

Latitude 27.1247222
Longitude 109.2886111

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Rano Raraku Statue Quarry

Rano Raraku is a volcano and the statue quarry from which 95% of the world-famous monolithic stone statues (moai) of Easter Island (Rapa Nui) were carved (Figures 1, 2). It was designated a UNESCO World Heritage Site in 1995. It is managed and administered by the Corporación Nacional Forestal (CONAF) as a unit of the Chilean National Park system. The statues are a unique aesthetic and cultural legacy. Every statue is deteriorating and endangered.

Rano Raraku archaeological zone is 1.2 x 1.1 km in size. The volcano is composed of tephra ash (tuff) that is a superb but porous and fragile sculptural material. It is exposed in irregularly shaped flows (papa) visually sub-divided into spatially discrete areas varying in stone quality, accessibility, and workability. The tuff evidences well-defined textures, from coarse, medium, to fine and was laid down in rough, dipping layers or “beds.” Bedding of the tuff appears to be a factor in the angle at which statues were cut in the quarries. Geologists have defined fragments of dense basalt (lapilli) scattered throughout the tuff. Lapilli impeded the carving progress on some statues or disfigured the surface appearance of others.

Rano Raraku tuff is highly susceptible to deterioration. It is a distinctive yellow-orange when freshly quarried but weathers to black. These and other inherent weaknesses of the stone material, coupled with the fact that Rano Raraku is a major tourist destination, create an urgent conservation imperative. Rano Raraku is one of two sites on Rapa Nui visited by nearly all of the estimated 54,000 tourists per year to Easter Island. It hosts some of the games and contests that are part of the yearly, island-wide arts festival known as the Tapati Rapa Nui (Figure 3). Management of the park is a major challenge. Preservation of the statues and the enforcement of rules to insure public safety is the job of the CONAF rangers (Figure 4).
Purpose of our Explorers Club Flag #50 Expedition

In 1954-55, the famous adventurer Thor Heyerdahl (Figure 5), a member of the Explorers Club, conducted the first modern and legally permitted archaeological excavations in Rano Raraku statue quarry on Easter Island (Rapa Nui). His excavations were carried out by archaeologist Arne Skjølsvold, who used acceptable scientific methods for the time. Their results were duly published in a report that remains useful today.

The work of Heyerdahl and the Norwegian Archaeological Expedition is noteworthy because other investigators before and after have haphazardly and callously “dug” more than 90 other statues in Rano Raraku with no archaeological control. None of these excavations were reported and most of them caused at least some destruction or loss of important information. How do we know?

Setting the Record Straight

The Easter Island Statue Project (EISP) is the most thorough and complete inventory of over 1,000 stone statues. It is a geo-referenced survey including measurements and photographs displayed on a series of maps and includes, as well, statues in museum collections world-wide. While other inventories may claim to exist, they are not now and can never be as complete as that of EISP. The statues themselves have changed, eroded and otherwise deteriorated over time. Details of design, form and style have been irrevocable lost and exist now only in our records. For the past 10 years, we have gathered hundreds of pieces of evidence in far-flung archives, libraries and unpublished field notes. We have reconstructed the “biographies” of nearly all of the statues in Rano Raraku. We have also researched excavation events to help clarify the role of archaeologists and archaeology over the years. We have clarified the personal histories of some of the statues and, in doing so, forged a few new links between the statues and some Rapa Nui families.

Our current project is the first legally permitted excavations in Rano Raraku since Thor Heyerdahl, and one of our main goals is what archaeologists call “salvage archaeology.” We are attempting to set the record straight for two very important statues that were first “dug”, so far as we know, by Katherine and William Scoresby Routledge, co-leaders of the Mana Expedition to Easter Island in 1914-15 (Van Tilburg, Among Stone Giants, Scribner’s 2003).

In her seventeen months on Rapa Nui, Katherine Routledge camped on the exterior slope of Rano Raraku in sight of what is now the reconstructed tourist destination known as Ahu Tongariki. She was often there while her husband was away on Mainland Chile with a small staff of Rapa Nui elders who worked with her on many sites. On one of her many visits to the interior of Rano Raraku, Katherine Routledge saw the beginnings of a suite of carved designs (petroglyphs) on the backs of two standing statues and, intrigued, decided to dig (Figure 6). She moved large amounts of earth behind the statues, but failed in both cases to record the carvings or to document what she collected. She never reached the base of either statue and sadly, disturbed at least one and possibly three human burials. A few months later, after the Routledges had departed the island to return to Britain, photos were taken of the excavated statues by the Carnegie Expedition (Washington, D.C.) led by Captain John Ault. Other photographs were taken by the Franco-Belgian Expedition to Easter Island (1934-35) and then by the Heyerdahl expedition.

Our Research Purpose

The purposes of our expedition and the research design for it include specific objectives in three important areas: archaeology, iconography, and conservation. The two
The expedition on which our Explorers Club Flag #50 was carried, and which is reported here, was the fourth season of our excavations in Rano Raraku Quarry. The two companion statues we called our “target statues” are in Quarry 2, one of the westernmost of 19 quarries we have mapped in the interior of Rano Raraku (Figures 10, 11). We designate all of the statues in Rano Raraku by the letters RR, and the interior of the quarry zone as 001. The statues were then given object numbers in consecutive order. The two statues we are currently excavating are RR-001-156 and RR-001-157. However, Katherine Routledge recorded other names for these two statues. She was told they were called “Papa” and “Mama.” We wondered for a long time who had told her that, and why?

The Statues Called “Papa” and “Mama”

Actually, there is an interesting story to the names “Papa” and “Mama.” Katherine and William Scoresby Routledge were working in 1906 as budding anthropologists in what was then British East Africa (modern Kenya). They and the other paternalistic British residents encouraged their Native workmen to call their employers “Papa” and “Mama.” Once on Easter Island Katherine, at least, continued the practice. Among her Rapa Nui consultants who worked with her occasionally in the field was a playful old man known as
“Langitopa.” Katherine Routledge was observed by the Rapa Nui to be a stern taskmaster with a sharp tongue who often was rather high handed with her husband.

One day she was in Rano Raraku with Langitopa. Katherine asked him if the two statues we are now excavating had names. Both of the statues were then and are now upright and partially buried. The statue we call RR-001-157 was above ground to the shoulders while RR-001-156, next to it, was buried right up to the nostrils. Langitopa looked at them for a while and then smiled. The short, buried one, he said, was “Papa.” The tall, more commanding one that towered over it was “Mama.”

The expedition experience, and virtually all of the work we have accomplished on Rapa Nui, has been immeasurably enriched by such stories, and by the warmth and encouragement of the Rapa Nui community as a whole. In fact, a brother-sister duo on our crew—Dario and Rosa Ika—are descendants of the very same “Langitopa” who teased Katherine Routledge. Cristián Arévalo Pakarati, co-director of our EISP project, is the great-grandson of Juan Tepano, a respected elder who was Katherine’s chief consultant and companion in the field throughout her stay on Rapa Nui.

Field Work

Working in Rano Raraku is a visual joy but not necessarily easy (Figure 12). To enter the volcano you have to hike uphill through a gap in the crater wall and over rocky, uneven ground that is sometimes slick with mud and flooded in rainstorms. In the morning, you have to listen carefully for the syncopated sound of thumping hooves to avoid being run down by horses and cattle as they leave or enter the quarry through the gap in search of water. On our site the wind sometimes tears papers out of your hands, blows down tents or shelters, and fills your eyes and nose with swirling red dust. At other times the sun is blazing hot and you would give anything for even the slightest breeze.

Our days are long and full. We depart the village in two vehicles by 8:00 am and arrive in time to hike in and begin work by 10:00. At the end of the day we have a delicious hot meal prepared in the field by Rosa and Anastasia Ika, who have a real genius for stretching a budget and serving food that is a feast for the eyes as well as the soul. During the days we are often visited by tourists, who are filled with questions about our work, the statues, and the island. The students love to talk to the visitors and some of these talented young people have command of at least a few words in many languages, including Japanese to Russian. We are continually amazed at the cosmopolitan culture of Rapa Nui.

We missed a few days in the field and quit early on others due to rain. At that time descending the slope and traversing the gap was a major challenge (at least to some of us). We spent our evenings and weekends on an inventory and catalog of the objects we had retrieved. Everything from fishbone to coral and from basalt to obsidian was collected and duly logged. Human bone, of which there were mostly small fragments, was treated with great care. Vaiheri and Melisanda spent hours sorting through shovels full of earth to retrieve the smallest fragment (Figure 13).

Expedition Techniques

Our techniques include a wide range of flexible methods that can be taught or demonstrated to students and used by people of varying ages, talents, and abilities. Among the first methods we used were GPS survey and mapping throughout the quarry. This involved base recording and condition assessment strategies that allowed us to gather large quantities of data including measurements, drawings and sketch diagrams, as well as observations on stone condition such as color and texture. During earlier states of survey procedures we used digital image-based documentation methods that included rectified photography and photogrammetry. During excavation, we work in teams of two (Figures 14, 15). Two excavators are in the pit at one time, while two teams of screeners work to sort
the objects retrieved from the dig. We have a full-time photographer who documents all objects collected and another team that works, when required, to sort and catalog such materials as bone and coral. It is painstaking and repetitive work, but essential to proper collection. All of the materials collected are taken to the EISP field office in the Mana Gallery to be washed, counted, sorted, and stored. At the end of the final excavation season they will be stored with the island museum (Museo Antropológico Padre Sebastián Englert, MAPSE).

Our database is massive, and includes an artifact inventory and an image catalog containing over 50,000 digitized visual and print documents. Management of this information is a full-time occupation and involves, as of this writing, a staff of 5 with training in archaeology and graphic design. DATASHARE, which is our on-line version of the database, is accessible by password today to two official Chilean agencies and to our collaborators and members of the Rapa Nui community who have an interest in it. Mónica Bahamondez P., director of the Centro Nacional de Conservación y Restauración in Santiago, notes that one goal of CNCR is to develop an Easter Island database that will be a major diagnostic and conservation tool (sistema nacional de información territorial).

Dr. Christian Fischer of UCLA and Mónica Bahamondez P. directed protective treatment of the stone surfaces of both statues (Figure 16). One of the water-repellent formulations consisted of a solution of BS290 at a concentration of 15/5 (V/V) diluted with Aguarras Mineral. The other was Cave Clear-S, a solvent-based water repellent. After some preliminary trials the different products were applied with a portable sprayer following a wet-on-wet application methodology until saturation of the surface was observed. The water-repellent solution at 15% was primarily used for the treatment of the exposed, and most weathered, parts of the statues. Once treated with the solution at 15%, the surface was sprayed with pure solvent in order to increase the penetration depth of the active product followed by a final application of CAVE CLEAR-S. On the excavated parts of the two statues which are in much better condition, only CAVE CLEAR-S was applied.

Expedition Results

We have collected 1,588 individual artifacts, of which 534 were collected this season. We have also collected 898 stone tools called toki that were used to rough out the statues in their early stages of carving (Figure 17). The sizes of the toki range from 6 to 26 cm long. One of the tools was found between 420 and 470 cm deep in the excavation for Statue RR-001-157. We will use this implement in some of our basalt sourcing studies using XRF techniques. Rafael Paoa Rapu, on of the Rapa Nui students working with us, will travel to UCLA in 2012 for more training in XRF analysis and other methods.

Two of our most important finds related directly to the ceremonial lives of the Rapa Nui. A small basalt boulder with a pecked and incised curvilinear design said to represent a canoe (vaka) was part of a pavement underneath statue RR-001-157. The vaka is a ubiquitous design that appears on many statues throughout the island, and is carved on the backs of both of the statues we are excavating. As we proceed in our studies we will evaluate the connection of this symbol to statue carving and transport as well as to Rapa Nui family groups. The second important find was a large (800 g) oval concentration of high-quality red pigment known as kie’a. Red pigment was used as body and face paint but also applied to some statues and especially to wood carvings known as kavakava. These objects give us insight into the ancient aesthetics of an especially artistic society.

On days with intermittent rain we were amazed to see how well the repellant Chris and Mónica applied did its job! Droplets quickly beaded up and didn’t penetrate the surfaces of either statue. We noted that the stone surfaces dried within a maximum of ten minutes. These are subjective observations, of course. We await the detailed analyses that will be carried out on the extensive data being downloaded bi-weekly by Tahira Edmunds. The last
phase of conservation intervention will follow our next excavation season, and is planned for December 2011 or January 2012.

We have also learned that the previously accepted idea that the statues were dropped base-first into holes prepared in earthen mounds is incorrect. The dirt and detritus eroded from above and filled up around the statues after they were upright in place. To raise them, the ancient carvers used wood poles as levers, pivoted the statues against exposed bedrock and then manipulated them within sub-rectangular holes cut into the bedrock and about 1m deep. Small, low walls of stone were built in some places to protect them once upright. This process occasionally left scars on the statues which others have suggested were caused by upright movement along prepared roads leading from the quarry. We now know, of course, that that is not true.

The Future

We will return to the field in March and again in May to continue our excavations. We are looking very closely at earlier quarries down slope from our current position, as well as employing modern methods for better examining and mapping the Rano Raraku lakeshore. Our XRF analysis and sourcing project will be complete by the end of our next field season and we hope to learn from it a great deal more about the political organization and use patterns within the quarry. Finally, we can confirm that, as in all megalithic cultures world wide, Rapa Nui society was inventive, enthusiastic, and determined. Their sacred architecture was vividly linked to the Rapa Nui cosmos, island-wide mortuary practices, and ritual activities regulated and informed by dependence links between the living population and the ancestors. The social impact of statue carving is gradually becoming clearer through our increased understanding of statue technology.

Biographies

The Easter Island Statue Project (EISP; www.eisp.org) is an archaeological inventory and database project initiated in 1982 and co-directed by Jo Anne Van Tilburg and Cristián Arévalo Pakarati. It describes in minute detail nearly 1000 monolithic stone statues (moai) throughout Rapa Nui (Easter Island). In Rano Raraku, EISP has compiled a contour map showing every statue and quarry and all main topographic features.

Jo Anne Van Tilburg, Ph.D. is an archaeologist and a Research Associate of The Cotsen Institute of Archaeology at UCLA, where she is the Director of the UCLA Rock Art Archive (Figure 18). Under her leadership, the Archive received the 2001 California Governor’s Award for Historic Preservation. Dr. Van Tilburg served as an appointed member (2 terms) of the National Landmarks Committee, US National Park Service Advisory Board; a past-grantee of the National Geographic Society, a member of the Explorers Club and a Fellow of the Royal Geographical Society. A biography and profile of her career was presented by Charles Osgood on CBS Sunday Morning.

Cristián Arévalo Pakarati is a painter, sculptor, graphic designer, surveyor, excavator, and co-Director of EISP (Figure 19). He has participated in public education programming fo for American and Chilean television and conducted museum objects research in Chile, the U.S. and the U.K. His scientific illustrations appear in dozens of Van publications in English and Spanish, including those of the Getty Conservation Institute in Los Angeles, CA. He is co-owner with Jo Anne Van Tilburg of the Mana Gallery (www.managallery.org) on Rapa Nui.
Figure 1 Overview of Rano Raraku, volcanic quarry and UNESCO World Heritage Site

Figure 2 Exterior of Rano Raraku with standing *moai*
Figure 3 Rano Raraku Interior during *Tapati Rapa Nui*

LEFT  Figure 4 Tourists along path maintained by CONAF
RIGHT  Figure 5 Explorer Thor Heyerdahl (right) with son and Captain Arne Hartmark (left)
Figure 6 RR-001-156 (left) and RR-001-157 (right) during excavation by Katherine Routledge

Figure 7 Drawing of RR-001-157 (left) and RR-001-156 (right) by Cristián Arévalo Pakarati
ABOVE Figure 8 Section from the GPS map of Rano Raraku Interior

RIGHT  Figure 9 Level diagram depicting the soil levels of RR-001-157 during different expeditions

BELOW  Figure 10 Target statues prior to excavation by Jo Anne Van Tilburg and Cristián Arévalo Pakarati
Figure 11 EISP Excavation grid map of Quarry 2, Rano Raraku

Figure 12 View of horses and excavation site within Rano Raraku
ABOVE Figure 13 Melisanda Pakarati collecting samples

LEFT Figure 14 Overview of excavation of RR-001-156 with Cristián Arévalo Pakarati and Patricio Madariaga Paoa
LEFT Figure 15 Team of two screening excavated soil

RIGHT Figure 16 Conservation treatment being applied to statue by Christian Fischer with Cristián Arévalo Pakarati holding ladder and Mónica Bahamondez preparing the next batch

Figure 17 Excavated *toki* from this season grouped by square
Figure 18 Jo Anne Van Tilburg with Explorers Club flag

Figure 19 Cristián Arévalo Pakarati during expedition