'A PO: The Rapa Nui Youth Archaeology Program Puna Pau Field Report

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The Rapa Nui Youth Archaeology Program Museo Antropológico Padre Sebastián Englert

The archaeology of Rapa Nui (Easter Island) has received a tremendous amount of attention in the last century. Researchers have traveled from all corners of the Earth to this miniscule island to solve the mysteries of the Center of the World. But this article is not about those people, nor is it about the mysteries. This report, rather, is about a special group of high school students in Rapa Nui eager to play an active role determining the future of their own cultural heritage. And we might argue that the work of these students may be more important than those popular and dramatic explanations of the island's prehistory.

Those who have been to Rapa Nui, and have been privileged to know some of the residents, know what a fantastic and unique island it is. Rapa Nui is a place where the people have practically nothing, and at the same time everything they want or need. It is a place where children who have never left the island already know theirs is the most beautiful place in the world. It is a place where cyber-cafes for tourists offer a view of toppled stone statues larger than life that have rested in silence for centuries in the back yards of the descendants of the same artisans that crafted those very statues.

And for 20,000 tourists each year, it is a place of archaeological wonders. What's the most amazing part of Rapa Nui archaeology? One would be hard-pressed to decide among the ornate petroglyphs, the thousands of obsidian points (*mata'a)* that litter the island, the ceremonial platforms (*ahu*), or the gigantic statues (*moai*).

Just as astonishing, however, is the limited participation by locals in formal archaeological work on their own island. After decades of archaeological investigations by international teams and the millions of dollars invested in those projects, remarkably few locals seem to have been inspired, or rather *empowered*, to contribute to the archaeology there.

The high school students that participated in our Puna Pau project are a strong testament to islanders' inspiration to study, learn about, and protect their cultural heritage. Yet they have little formal training or equipment to do so. However, in July of 2001, an archaeology program for local high school students was initiated as a joint effort between Francisco Torres Hochstetter (Director, Museo Antropológico Padre Sebastian Englert, hereafter MAPSE) and Terry Hunt (Associate Professor of Anthropology, University of Hawai´i at Mānoa).

For two weeks in July of 2001 and 2002 a dozen or so Rapa Nui high school students received hands-on training in the field as part of the University of Hawai'i archaeological field school. The U.H. Rapa Nui Field School is committed to training students in archaeological field and laboratory methods. The field school concentrates on data collection in a manner that is non-invasive and non-destructive to the island's fragile cultural heritage and ecosystem.

Starting in March of 2003, 'A Pó (The Rapa Nui Youth Archaeology Program) was formalized to become an intensive, year-round effort—working in collaboration with, rather than dependent on the University of Hawai'i program. On top of a demanding high school schedule, students agreed to two nights per week of class and work in the museum computer laboratory and one full day of field work each weekend.

This is the report of our first field project at the site of Puna Pau, the quarry used by islanders in prehistoric times to manufacture the giant red-scoria topknots (*pukao*) that once adorned some of the standing *moai*. Puna Pau was selected as an ideal first site for the Rapa Nui Youth Archaeology Program because of the size of the quarry, the significance of the artifacts in prehistory, and the limited available data for the site. The goal was for the students to gain computer skills and knowledge of archaeology, and to convince these young people that *they* have the capacity to work at a professional level and make an original contribution in the documentation and study of their island's culture.

After reviewing the archives of MAPSE, we found the previous work at Puna Pau to this point to be rather unsatisfactory. The most extensive mapping project on the island (Cristino et al. 1981, Figure 1) showed contours only at 5m intervals and two points (to represent the mere existence of artifacts in the area, we presume). Written descriptions are scant, superficial, and unsystematic.

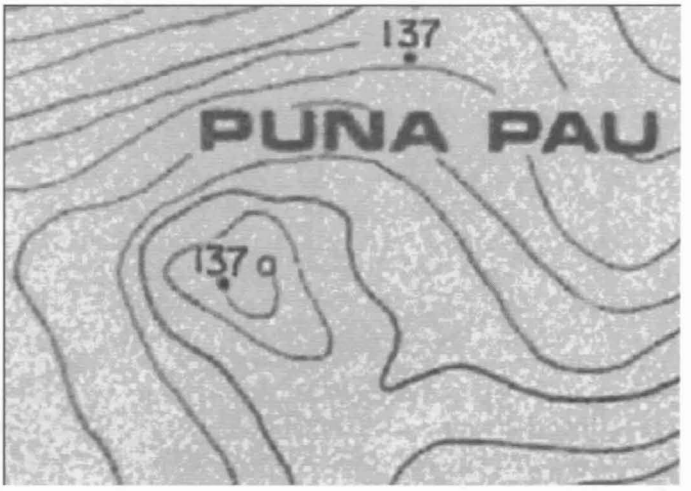

Figure 1. Contour map of Puna Pau adapted from Cristino et al. 1981.

While Rano Raraku, the main prehistoric quarry site for statues on the island, receives an enormous amount of attention from tourists, archaeologists, and local residents (and deservedly so) the *pukao* quarry seems relatively ignored. We are not arguing that this site is of equal importance to archaeologists or tourists, but like all sites, we felt Puna Pau should be documented thoroughly for the sake of preservation and respect.

The goal of our project at Puna Pau was to expand documentation of the site using geographic information systems (GIS). The intention was to create a more detailed contour map of the area and record all archaeological materials found at the site in an electronic GIS database. This was a formidable undertaking for both the instructor and the students. Most of these students had never participated in any archaeological activity, none of them had ever heard of GIS, and a few were not even comfortable using the mouse on a computer when we began. Regardless, we spent night sessions learning about methods and equipment, and weekends in the field putting the skills we learned in the museum to work.

Puna Pau is just one of many satellite volcanic cones on the island. At the site, some twenty-three *pukao* lie scattered – some partially buried, some in small fragments, and some nearly 3m in diameter. The remains of seven *pukao* rest in the inner depression of the cone. Two more are perched in a smaller depression atop the rim of the northeastern side of the cone. And fourteen others lay strewn along a gently sloping path that tourists now follow to visit the site (Figure 2).

With up to ten students working at the site at any one time, one group of students learned how to map the terrain, another made plan maps of all the *pukao*, and a third group measured and recorded the specific dimensions and characteristics of each individual *pukao*. Students had a chance to participate in all aspects of the field work at different times.

Contour Map

Unfortunately, the students did not have access to any electronic mapping devices at the onset of the project. However, in the museum storeroom was a theodolite left in 1978 by archaeologist William Mulloy (who incidentally expressed a strong desire to form an archaeological field school for youths from the island and other countries). WD40 brought the theodolite back to life, and one by one the students learned how to measure distance, cardinal direction, and azimuth angles with this contraption that would have made a fine addition to the museum showroom itself (Figure 3). Using a handheld GPS unit, the students began mapping the interior of the cone by establishing a datum with a radius of error no greater than 6 meters. Placing the theodolite at this datum point, the students gathered information for some 400 points regarding the terrain of the interior of the cone. To the best of their ability the students created an imaginary 3m x 3m grid on the interior of the cone and gathered topographical information for each vertex of the grid. For the exterior slopes of the cone, another 400 points were recorded, but in a larger 5m x 5m grid.

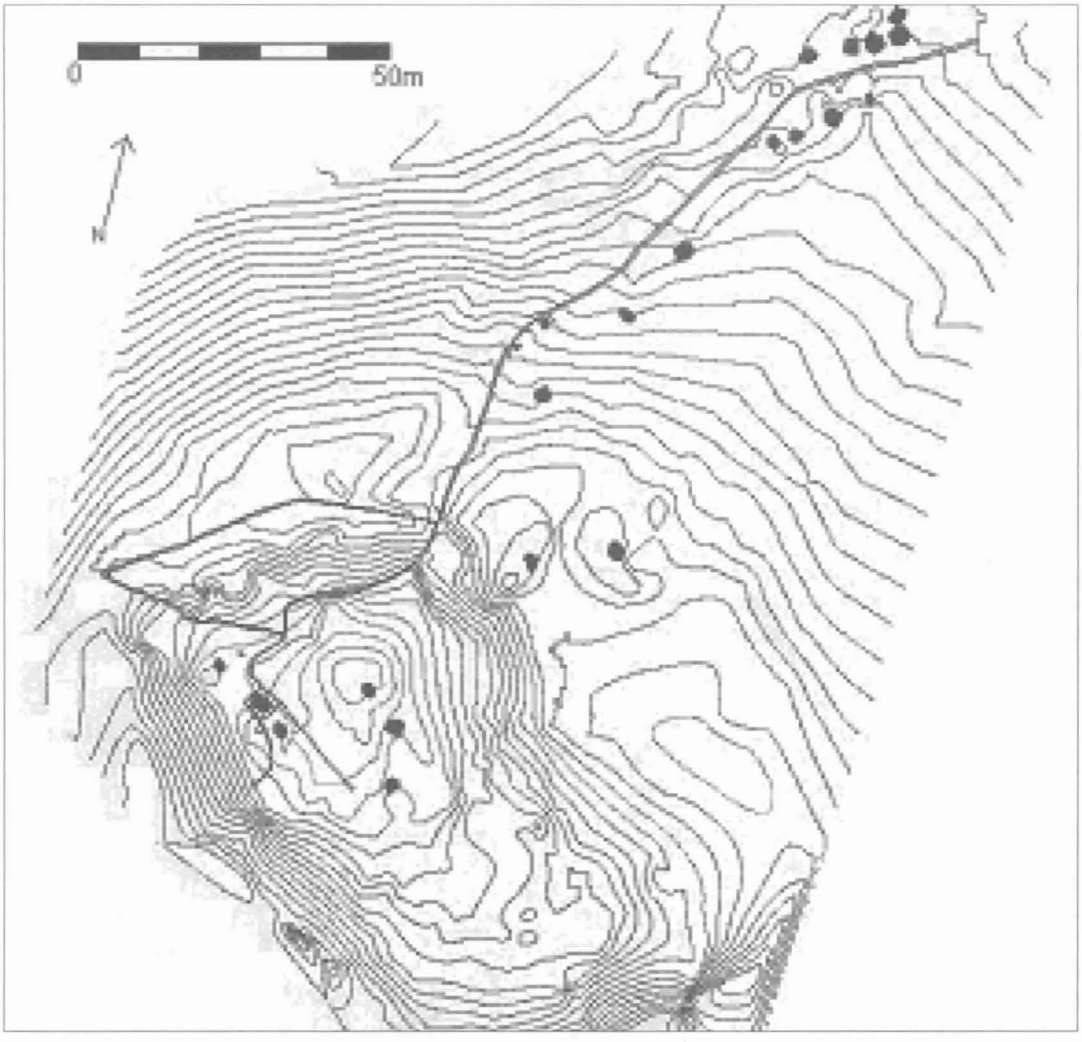

Figure 2. Contour map of Puna Pau, at 1 m intervals, created from GIS measurements made as part of the project.

Information from the points (distance from datum, cardinal orientation from datum, and azimuth angle from the datum) were entered into an Excel data/file during the week following each weekend of field work. The students learned enough trigonometry to convert these recorded figures into UTM coordinates

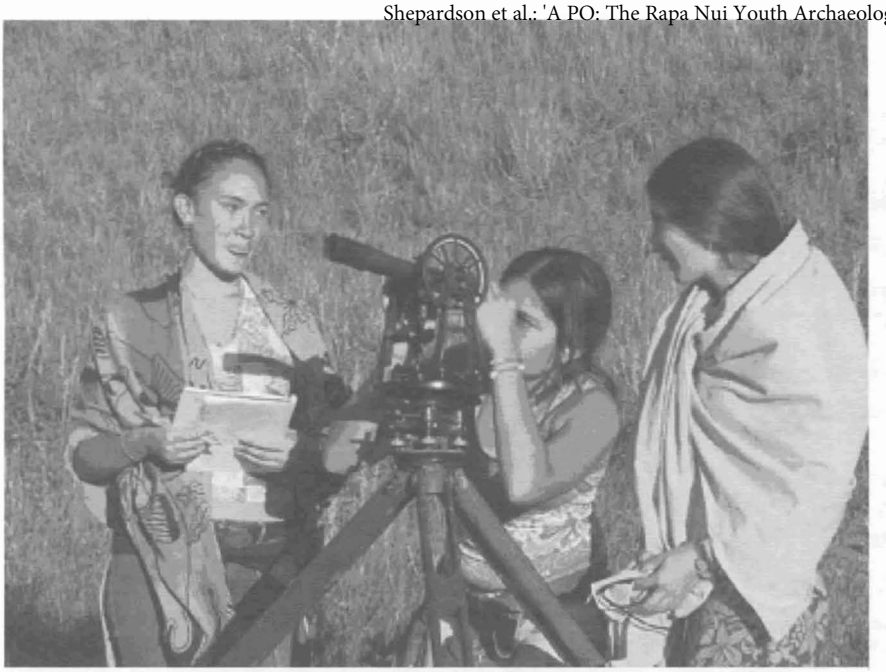

Figure 3. Students using the theodolite left behind by William Mulloy in 1978.

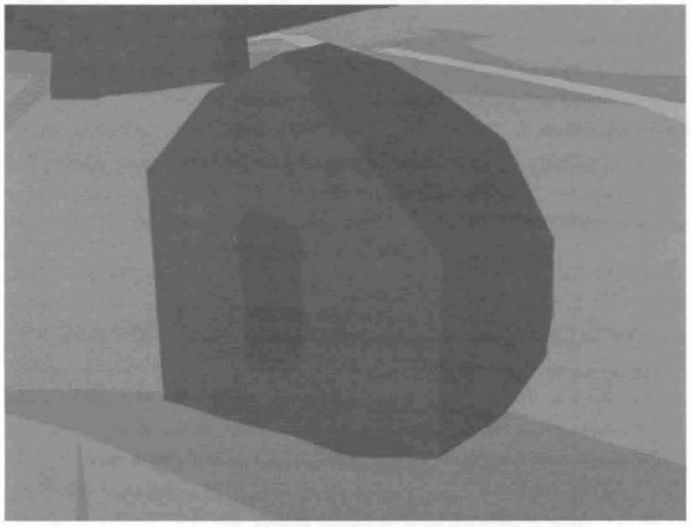

Figure 4. Digital model of a *pukao* created by the students.

and elevation above sea-level in meters. That information, in turn, was exported to ESRI's GIS program ArcView 3.2 where data was interpolated for all points between our selected vertices on the imaginary grid, creating a detailed elevation raster (a collection of points with *x*, *y*, and *z* coordinates). Raster information was then used to create a contour map of the area with 1m intervals (Figure 2).

PUKAO

To create plan maps of the *pukao*, students learned how to set up a meter tape as a transect, or sometimes two as a makeshift Cartesian coordinate system. Plan maps were digitized in ArcView, and the digital replicas were geo-referenced to layer onto the contour map with points accurately recorded by an electronic total station (on two days loan from the University of Hawai'i at Mānoa Rapa Nui Field School).

The students designed their own site report forms to describe the *pukao*. Information on the *pukao* included a general description, an assessment of deterioration, whether the *pukao* was partially buried, a description of any petroglyphs visible, and a number of metric attributes (height, circumference, radius, etc.) Students also photographed each *pukao* digitally from four different angles (north, south, east, and west). And finally, the maps, the descriptions, and the photos were integrated into one complete GIS database. The resulting database allows descriptions and photos for each individual *pukao* to be accessed with the click of a mouse.

To take the project one step further, and perhaps better capture the impressiveness of the Puna Pau site, the students also created a three-dimensional digital model of the area and the *pukao* (Figure 4). The contour map of the terrain was adequate enough to create a three-dimensional setting, and the students then effectively created a contour map of each individual *pukao*. Rather than using a theodolite, for the *pukao* the students recorded topographic points with meter tapes and levels. In ArcScene (another ESRI GIS program), all topographic information was used to create triangulated irregular networks (TINs) and digital 3D models. The resulting three-dimensional rendering is a virtual replica of the actural site (Figure 5) – completely navigable and including all of the artifacts (Figure 6). While the virtual site leaves some precision and accuracy to be desired, it was a worthwhile exercise in technology and more than most archaeological surveys on the island offer at this point in time. The high school students, by executing their own site surveys, in two and three dimensions, are hoping to "up the standards" for professional archaeologists who apply for permits to work on the island.

DISCUSSION

The Puna Pau project, once completed, was presented before general audiences at the Museo Antroplógico Padre Sebastián Englert and before the students' peers at the local high school. It was so popular with the island's population that extra presentations had to be arranged so everyone could see it. Elders and authorities of the island expressed a sincere gratitude for the students' hard work and interest in the preservation of local culture. While the site report may not provide any new immediate evidence to a better understanding of the ancient culture that quarried stone from the area, we present it as a refreshing alternative in Rapa Nui archaeology. The "mysteries" of Easter Island have been (allegedly) solved several times over, and with the meager resources available to the Rapa Nui Youth Archaeology Program and the general length constraints of this journal, we cannot yet again solve those mysteries. We have however, ensured to some degree,

Figure 5. A photo of the Puna Pau site showing the *pukao*.

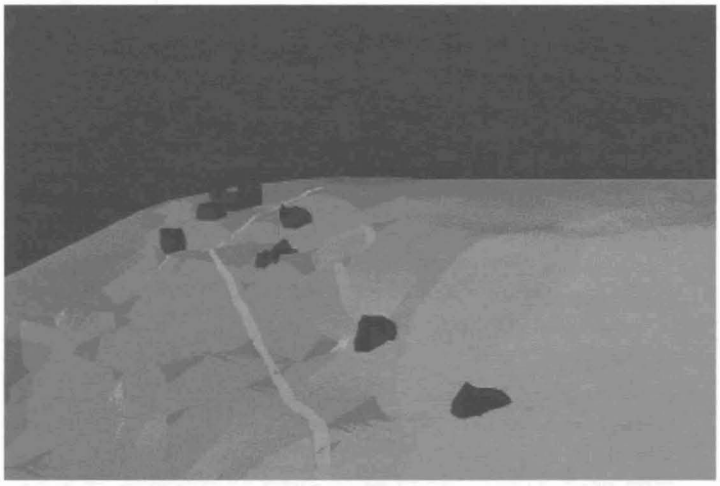

Figure 6. A digital depiction of the Puna Pau site made from the database and showing the *pukao*.

the survival of the site (as a digital model) for a much longer time than the physical site may preserve.

And in the process, many Rapa Nui youths have begun to understand issues and technology that may be critical if they are to determine the future of their own cultural heritage. These students also make a strong statement to archaeologists and admirers of Rapa Nui culture around the world – that if our true goal is to protect and understand the historic people that thrived on the island, perhaps our greatest hope is to entrust the research to the Rapa Nui people. International expeditions to the island are generally expensive, complicated, and therefore often of short duration. However, if we take the time to introduce technology and methods to the local population (who are often highly motivated to learn), research on the island may become ever more efficient and thorough.

With minimal equipment (all either abandoned or borrowed), and without spending a dime, the Rapa Nui Youth Archaeology Program has made a significant contribution. Beyond adding to the information base and preservation of Rapa Nui culture, the program and the students have contributed toward the empowerment of the Rapa Nui people to explore and preserve their own cultural heritage. Next year's students are working to do the same. The Rapa Nui Youth Archaeology Program encourages anyone interested to contribute – as an instructor, a volunteer, with equipment, software, or financially. For inquiries or a CD copy of the Puna Pau site report, please contact Francisco Torres (ftorresh@mapse.cl) or Britton Shepardson (bleif@hawaii.edu).

REFERENCE

Cristino, F., C., P. Vargas C., and R. Izaurieta S., 1981. *Atlas Arqueológico de Isla de Pascua.* Santiago, Facultad de Arquitectura y Urbanismo, Instituto de Estudios, Universidad de Chile.