

Rapa Nui Landscapes of Construction

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Rapa Nui (Easter Island) is the most remote inhabited spot in the world. It is famous for its gigantic stone statues, which have been the focus of much archaeological study. The new Rapa Nui Landscapes of Construction Project, described in this article, adopts a more holistic approach, aiming to place the statues and associated monumental structures in the context of the wider landscape of settlement and cultivation. It also concentrates on the processes of construction as much as the final products, with an emphasis on quarries and other places of construction, approached through multiple methods of field exploration.

Easter Island is a triangular speck of volcanic origin, some 16km by 8km, encompassed and battered by the immensity of the Pacific. It is the most distant inhabited point in the world from other dry land, being located in the eastern area of the South Pacific some 3200km west of the South American continent, and 2000km from its nearest neighbour, Pitcairn Island (Fig. 1). It was discovered for the western world by the Dutchman Jacob Roggeveen on Easter day of 1722; since the 19th century, its inhabitants have referred to it as Rapa Nui. Its gigantic stone statues (*moai*) are probably the most recognizable monuments of the pre-modern world, yet, despite considerable research, they remain imperfectly understood. There are approximately 1000 *moai* on Rapa Nui of which c.270 were set up on megalithic ceremonial platforms (*ahu*) erected around the island's coastline (Fig. 2), while c.400 remain at Rano Raraku – an extinct volcano and the main statue quarry. A further c.46 can be found on the statue roads supposedly having been abandoned in transit to their *ahu*. The dating of the commencement of statue production and their setting up on *ahu* is hotly disputed, perhaps going back to the 8th century AD, but the main phase of activity is traditionally placed in the 11th to 15th centuries AD and indeed it has recently been suggested that settlement may be as late as the 12th century AD.¹ By contrast, the most substantive information on Rapa Nui's settlement and subsistence patterns relates to the period after AD 1500.

The *Rapa Nui Landscapes of Construction Project*² is the first British-conceived archaeological project on Rapa Nui since the 1914–15 privately funded British expedition of Katherine Routledge. Her still invaluable pioneering work was that of surveying and mapping everything she saw above ground, and included some minor excavations – in all comprising a 17-month stay on the island.³ Following a joint Franco-Belgium expedition in 1934–35, which undertook a major study of petroglyphs and other surface archaeological data,⁴ in 1954

Thor Heyerdahl arrived on the island for a year with a team of American and Norwegian archaeologists. They embarked upon the island's first extensive scientific excavations, including working on *ahu*, and at Rano Raraku.⁵ Since then there has been a range of survey and some excavation

work on the island's monuments, mainly by Norwegian and American teams. With notable exceptions,⁶ the less evocative remains of everyday settlement and cultivation features have received little attention. Later 20th-century and current research has been carried out within a North American derived processual tradition of archaeology, concentrating on functionalist pragmatics of environment and economy and on general models of chieftain social organization, largely to the exclusion of exploring meaning, symbolic dimensions and uses of the landscape at the scale of the individual. Our project proposes a new paradigm, based on a landscape scale of analysis and considerations of meaning resulting from people-centred understandings of places and activities.



Figure 1 Easter Island (Rapa Nui) location map.



Figure 2 Tongariki is the largest ceremonial platform on Rapa Nui, with 15 statues set up on it. It was restored after destruction by an 8m tsunami following an earthquake in Chile in 1960. The tsunami carried statues weighing up to 30 tons 150m inland.

The Rapa Nui Landscapes of Construction Project

Rapa Nui was designated a World Heritage cultural landscape in 1996. In recognition of this, our work seeks to research the island as an interconnected landscape in which the various construction activities associated with the *moai* and settlements are investigated as a unitary phenomenon. This contrasts with the extant work, which has been separated into discrete units of study: quarries, roads, *ahu* and settlements, each allied with different research teams. Our research centres on the construction process being as meaningful as the final products and the idea that the places of construction would themselves both reflect and contribute to the meanings of the construction process. Our fieldwork combines multiple methods of field exploration: i) GPS (Global Positioning Systems) mapping of sites and their landscape contexts; ii) laser scanning of quarry surfaces to characterize working procedures and the architecture of quarry bays; iii) geophysical prospecting to locate buried workings; iv) limited excavation at the quarries to gain dating evidence and better elucidate the quarrying environments (e.g. pollen sampling); and v) phenomenological survey – investigating the sensory characteristics of the places of construction, including what would be experienced in terms of visibility and inter-visibility and noise between people and places, and all informed by the data we already have on these past environments. Two reconnaissance seasons were undertaken in 2006/7 and we commenced a 5-year programme of survey and excavation in February 2008.

The quarries: the chronology, environment and organization of working

Rapa Nui has three main extinct volcanic peaks, one near the each corner of its triangular form, the highest Terevaka in the north rising to 510m above sea level (Fig 3). Other smaller volcanoes and parasitic cones – some 104 of them – are dotted about the island. These include Rano Raraku, the quarry from which the majority of the statues were carved from consolidate tuff, and Puna Pau, the source of the red scoria for the red hats or topknots (*pukao*) that adorn some of the statues on the *ahu* (Fig. 4). The *pukao* are interpreted as an indication of the high status of the chiefly individuals/lineage heads that the statues are thought to stand for. There are several key questions relating to the quarries. What are the dates and chronology of exploitation of Puna Pau, and Rano Raraku, and is there any chronological variation? What was the time and scale of deforestation in the quarry environs? How continuous

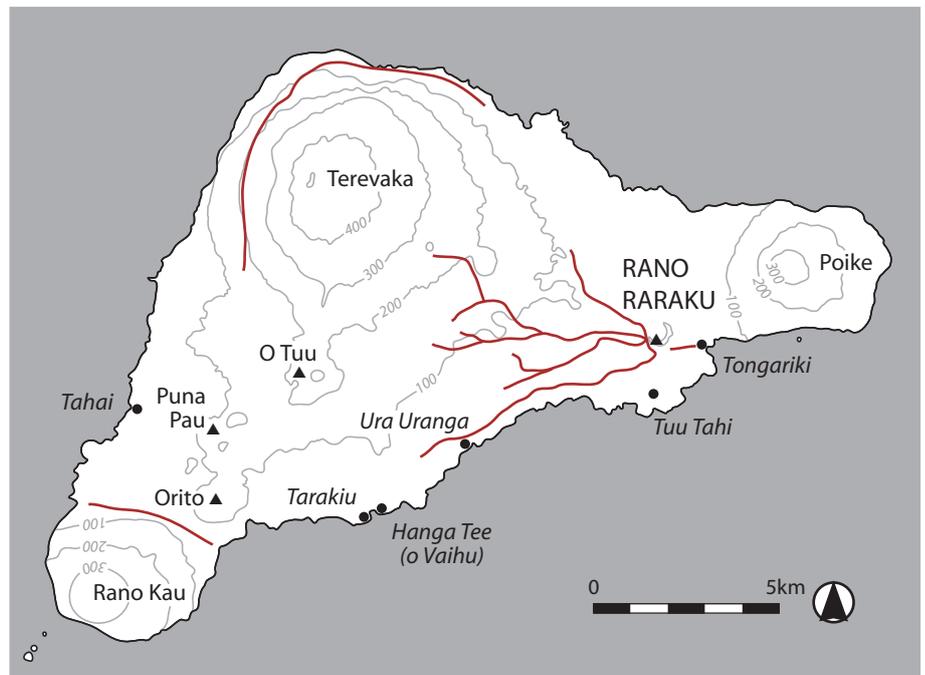


Figure 3 Map of Rapa Nui showing the sites mentioned in the text and the statue roads (in red).

was production? Puna Pau lacks detailed survey, and our excavations will be the first. The site currently relies for dating on the *ahu* that have red scoria facings and *pukao*. Work at Rano Raraku has focused on the morphology of the statues and the site has had no further excavation

since Heyerdahl's expedition. We have permission to go back into these old excavation trenches, which cut through ancient quarry spoil heaps, to isolate horizons of quarrying activity and to sample charcoal for dating and pollen for environmental information.

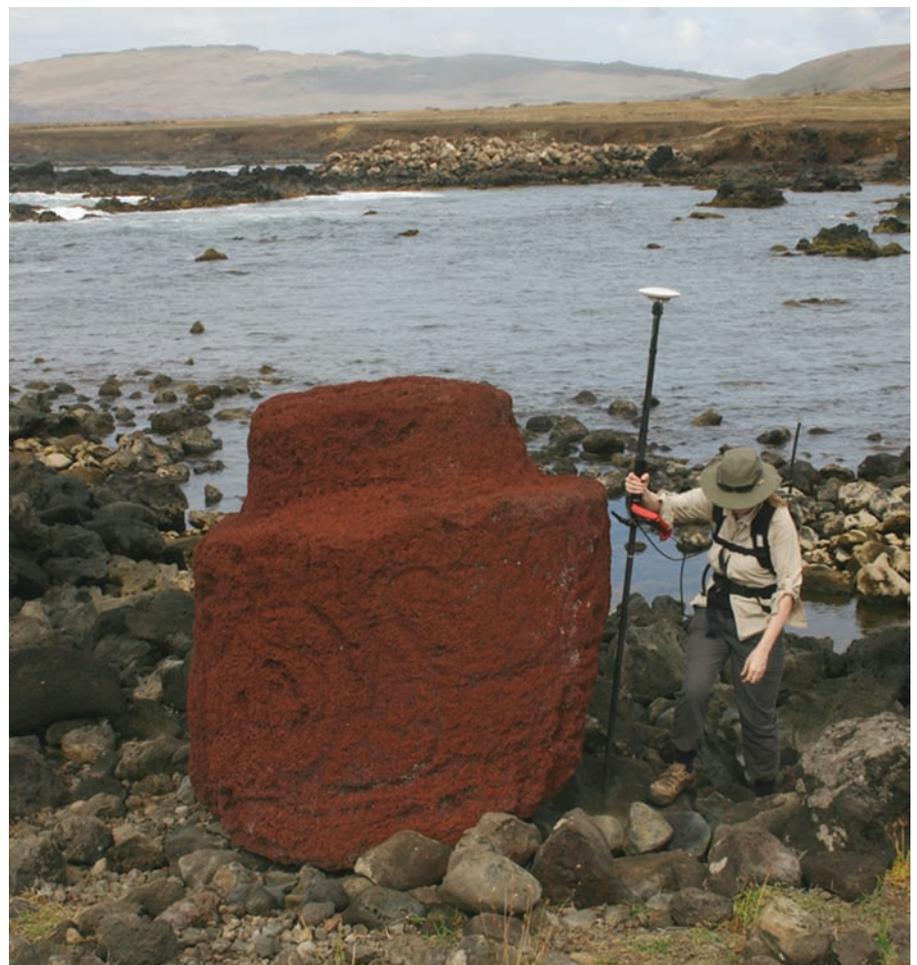


Figure 4 Kate Welham surveying the location of a toppled statue hat (*pukao*) at Abu Hanga Tee (*Vaihu*).



Figure 5 The red scoria quarry of Puna Pau. Note the line of “abandoned” statue hats leading away from the crater en route to *ahu* sites.

Our 2008 season focused on Puna Pau and selected *ahu*. We completed a topographic survey of the Puna Pau quarry and used resistivity survey to locate the route for the transport of the *pukao* out of the quarry (Fig. 5). Puna Pau fortuitously lies under a narrow rain cloud that crosses the island in a NW–SE orientation, and this aided the viability of the resistivity survey, the functioning of which relies on the moisture content of subterranean sediments. The conventional geophysical survey that we used first allowed a broad surface area to be covered but only

penetrated one metre; it did, however, suggest the presence of a quarry road to the west side of the present day visitor path into the quarry crater. To achieve deeper information we used the resistivity technique of tomography. This provided slices of stratigraphic information along each of nine 40m long transects which were set up across the suggested road (Fig. 6). Our results indicate quarry spoil on the outside of the quarry crater and suggest the presence of a now buried c.5m wide road exiting from the crater. This will be

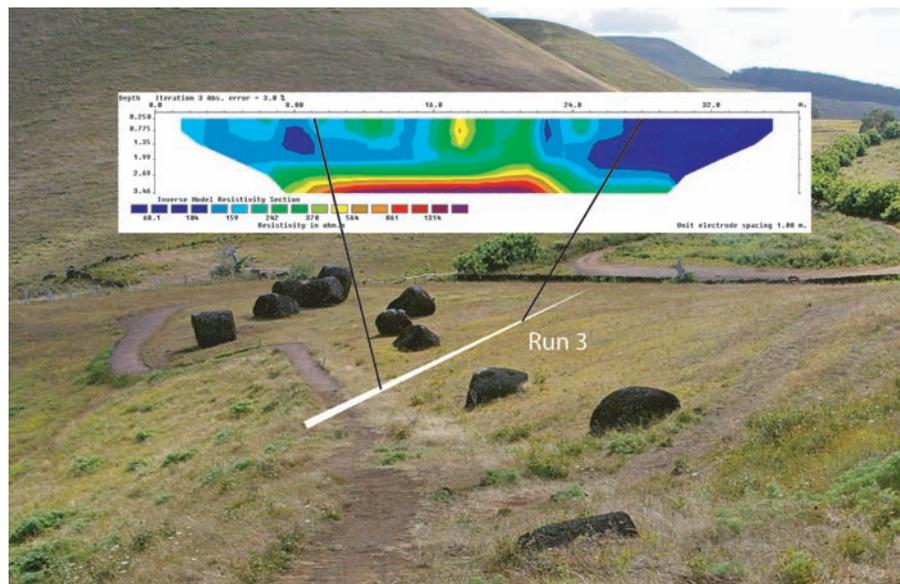


Figure 6 Tomography resistivity survey at Puna Pau. Nine, 40-metre long tomography runs were undertaken at intervals across the route of the suspected quarry ‘road’ down the outer slope of Puna Pau (located in the Figure to the right of the present day visitor path). The results are represented diagrammatically as a slice of the underlying stratigraphy along the line of each run. Here red indicates high resistance to the passage of an electric current (the road on bedrock?), and blue represents low resistance (unconsolidated quarry debris?). In this representation of Run 3, bedrock - the quarry road, is 2.5m below the ground surface and covered in what is interpreted as later quarry debris.

the location of one of our forthcoming excavation trenches.

During preliminary surface assessments of Rano Raraku we were struck by the fact that so few of the statues left the quarry. The traditional view is that quarrying activities were abandoned due to inter-tribal feuds and resource crises caused by the felling of palm trees for *moai*-moving equipment and concurrent forest clearance for farming and presumed ensuing crop failures due to nutrient depletion. In this scenario Easter Island recurrently provides a parable for anthropogenic environmental destruction. More recently Hunt has shifted the greater blame for the decimation of the *Jubaea* palm to the voracious consumption of its nuts by the Polynesian rat (*Rattus exulans*), which was introduced by the first settlers either as stowaways or as a source of protein.⁷ It is not in doubt that Rapa Nui was once tree-covered, but it may be simplistic to see Rano Raraku merely as a statue-producing factory with its monuments abandoned at a gross moment of socio-economic crisis. Many statues remain attached to the bedrock and others were set up encircling the outside of the quarry, blindly facing out to sea; none of the quarry statues have had their eye sockets carved (Fig. 7). These statues are deeply buried, often with only their heads above ground. A functionalist view is that they were thus set up to enable further finishing work – but if so, why then were they left to become so encompassed by quarry spoil? An alternative explanation, we suggest, is that these statues were never meant to be removed from the quarry, or to be detached from their bedrock, but were purposeful embellishments of a sacred place.⁸

Our preliminary survey at Rano Raraku has also prompted questions concerning the organization of working. Can we isolate discrete working areas in the quarries? How does this reflect the social organization of work? Are different activity zones inter-visible or inter-audible and what are the social and other implications of this? Can the spatial positioning of quarry spoil heaps, routes into and from the quarries, together with the working areas, be understood as a form of “work architecture”, which could provide insights into the social meanings and roles of production. There are also questions of what were the methods of working at the different quarries? Is there intra- or inter-site variability in the tools used? Preliminary work at Puna Pau suggests usage of different stone working tools (much thinner axes) than those of Rano Raraku.

More than 50 statues on the island were created in small regional quarries



Figure 7 Rano Raraku quarry bay, spoil heaps and one of the set-up statues encircling the quarry and facing seaward.

that may have preceded the use of Rano Raraku. Our work locating and surveying these quarries is on-going. This season with the help and great knowledge of Claudio Cristino and Patricia Vargas (University of Chile) we relocated one of these local quarries at Otuu, first discovered by Heyerdahl. Here we used laser scanning to record the small “statues” still attached to their rock outcrop.

The statue roads: the transport of working?

The island’s ancient statue roads lead in a dendritic fashion from Rano Raraku (Fig. 3). These roads are interpreted simply as a means of moving the statues to the *ahu* either prone using sledges and tree-rollers, or upright in some sort of sling. Apparently abandoned, prostrate statues lie along the routes of these roads – sometimes on their backs, sometimes on their faces (Fig. 8). Like the quarry statues they too lack carved eye sockets. Surface archaeology and some excavation indicate that the roads had formal kerbs and were paved. In what physical and conceptual ways do these roads link sites? Our current work walking along the roads and considering them as sensory journeys suggests that they can be equally conceived of as routes to the quarry as well as routes to *ahu*. The prone statues are closer together proximate to Rano Raraku and in inter-visible locations. Perhaps, as Routledge suggested, they were originally upright markers along processional routes, thus providing a heightening of the ceremonial journey on reaching Rano Raraku.⁹ Coalescing with other groups and travellers, as the roads feed into the main route to the quarry, would have also produced a unifying experience on approach. In this context the roads might

be seen as facilitating transformative social journeys, linking people, places and experiences with Rano Raraku.

The *ahu* landscapes: the relocated products of working

The *ahu* of Rapa Nui, particularly the “complex *ahu*” with *moai*, have pre-eminently been studied in terms of their construction features, their chronology, and the spatial density and distribution of architectural types. Instead, our research considers the meanings incorporated in the *ahu* construction. The *ahu* are foremost in physically unifying the island’s resources and elements of monument construction, both in their materials and in the positioning of the monuments. The Rano Raraku and Puna Pau quarries are, for instance, widely separated, yet *ahu* up to 18km apart combine *moai* and *pukao*. The complex *ahu* are topographically located at the interface of land and sea, the coastline of the island being ringed by *ahu* on which the statues are set up with their backs to the sea and their eyes



Figure 8 Prone statue along one of the statue roads.

looking inland. It is only at the *ahu* that the *moai* have carved eye sockets and finds suggest that at least some of these were given eye inserts of white sea coral with red scoria irises. This prompts the obvious questions of what the *moai* were gazing at, and in what ways the *ahu* and *moai* related to the everyday landscapes of settlement, agriculture and fishing? So far we have completed walkover surveys of the landscape contexts of 30 *ahu* and more detailed mapped and sensory surveys of three south coast *ahu* – Tarakiu, Hanga Tee (Vaihu), Ura Uranga and one inland *ahu*, Tuu Tahii. *Ahu* are recurrently situated in valleys with closed horizons and it is these spaces, extending up to 1km inland, that the *moai* overlooked. Directly in front of the *ahu* there are plazas, many of which clearly have been terraced and levelled which could have only been achieved by tree-clearance (Fig 9). Beyond the plaza and extending inland there a series of settlement features; first, elite houses boat-shaped houses (*hare paenga*, (Fig. 10) and associated features such as ovens (*umu*) and further inland there are other domestic buildings, more ovens, rock gardens (stone mulching to prevent moisture evaporation), chicken houses and planting/tree enclosures called *manavai*. There are great difficulties unravelling the dating of all of these structures, but certainly by the end of *ahu* use these would have been cleared landscapes, indicated by the sheer intensity of rock gardens. In these landscapes beyond the



Figure 9 *Ahu* Hanga Tee (Vaihu), one of our sites of detailed landscapes studies. Note the stone-free, levelled plaza in front of the *ahu* and fallen statues.



Figure 10 Stone foundation of a boat-shaped house (*hare paenga*), with an associated *poro* (sea boulder) pavement.

plaza the standing *moai* and *ahu* structures today appear slight and topographically come in and out of view, and the noise of the sea is faint, perhaps originally providing just the most distant reminder that the *moai* oversaw daily activities. Our experiments indicate that human vocal noise and construction activities such as stone hammering at the *ahu* would not have penetrated beyond the plaza areas. The *ahu* landscapes, even when treeless as today, have limited views to the major quarry and resource areas on the island. Those in the west of the south coast have views of Mount Orito from which the majority of the obsidian was obtained, but the proximate Puna Pau remains invisible. Interestingly Rano Raraku is only in direct view of a very limited number of *ahu* on the eastern part of the south coast, and most dramatically at Tongariki, the largest statue *ahu* on the island (Fig. 2).

The backspace of the coastal *ahu* feels secret space, being obscured by the back wall of the platform, and usually having a narrow level area before a steep rocky descent to the sea. This area is dominated by the sound of the sea, and it is here that cremations took place, utilizing sea winds to fuel the pyres and disperse the stench of rotting bodies. Our spatial studies indicate that the crematoria are associated with the west sides of the *ahu*, suggesting a cosmological order to the positioning of specific *ahu* elements. The *ahu* themselves seem to be specifically placed at bays and access points to the sea. Many *ahu* are physically connected to the sea and we are now beginning to identify the recurrence of canoe ramps running down the sides of *ahu*, as can be seen at their most monumental in the reconstructed Tahai complex (see front cover image). The ramps are made of *poro*, interlocking beach boulders of pillow lava; these were also used to cover the sloping ramps of the

ahu platforms and the *ahu* platform itself is often canoe-shaped. These relationships with and references to the sea suggest the symbolic and actual importance of canoes. These land and sea references are continued into the *ahu* landscapes: the elite boat-shaped houses have sea *poro* pavements and *poro* stones were used to form the sides of ovens (*umu*). Another association that we have noted are sea coral and rocks with sea algae being incorporated into the walls of tree-cultivation enclosures (*manavai*). Collectively this hints at a symbolically connected landscape that makes metaphorical use of combined land and sea references.

Conclusion

Our project is at its beginning. Here we have indicated its research approaches and recent work, and given an outline of the main features of the Rapa Nui landscape in which major monumental construction activities took place between approximately the 12th and 16th centuries AD. By considering the landscapes of construction across site entities that previously have been studied separately we hope to realize a new type of understanding of what it meant to work the quarries, to move and erect the statues, and to live in a landscape dominated by them.

Notes

- 1 T. Hunt, "Rethinking the fall of Easter Island", *Scientific American* 94, September/October 2006, accessed from American Scientist online, 9 April 2007.
- 2 The *Rapa Nui Landscapes of Construction Project* is jointly directed by Sue Hamilton (Institute of Archaeology UCL) and Colin Richards (University of Manchester) in co-directorship with Rapanui colleagues Susana Nahoe (University of Chile) and Francisco Torres H (Director MAPSE – Museo Antropológico Padre Sebastián Englert, Rapa Nui). We are working in

collaboration with the Universities of Chile and Hawaii Pacific, and CONAF (the Chilean National Parks Authority). This article is written on behalf of all of the project directors. The laser scanning and GPS mapping was undertaken by Dr Kate Welham, Bournemouth University, UK. The geophysical survey was undertaken by Adrian and Norma Challands, freelance consultants. Professor Ruth Whitehouse (UCL) and Mike Seager Thomas (Honorary Research Fellow UCL) undertook the walk-over and phenomenological surveys of *ahu*. We thank Profs Patricia Vargas and Claudio Cristino (University of Chile) for introducing us to many difficult to locate sites. We thank CONAF for their support and permission to work in the Rapa Nui National Park and MAPSE for the use of their facilities.

- 3 K. Routledge, *The Mystery of Easter Island* (Rapa Nui: Rapa Nui Press, 2005: facsimile of the 1919 edition).
- 4 H. Lacvachery, *Ile de Pâques* (Paris: Editions Bernard Grasset, 1934); A. Métraux, *Ethnology of Easter Island* (Honolulu, Hawaii: Bernice P. Bishop Museum 160, 1971: reprint of 1940 edition).
- 5 T. Heyerdahl & E.N. Ferdon (eds), *Reports of the Norwegian Archaeological Expedition to Easter Island and the East Pacific. Vol. 1: Archaeology of Easter Island* (Oslo: Monographs of the School of American Research and the Kon-Tiki Museum, 1961).
- 6 P. C. McCoy, *Easter Island Settlement Patterns in the Late Prehistoric and Protohistoric Periods. Bulletin 5* (New York: Easter Island Committee Fund for Monuments Inc., 1976); C. M. Stevenson & S. Haoa, "Prehistoric gardening systems and agricultural intensification in the Le Pérouse area, Easter Island", in *Proceedings of Fourth International Conference on Easter Island and East Polynesia*, C. M. Stevenson, G. Lee, F. J. Morin, (eds), 205–13 (Los Osos CA: Easter Island Foundation Bearsville and Cloud Mountain Press, 1998); P. Vargas, C., Cristino, R. Izaurieta, *1000 años en Rapa Nui* (Santiago de Chile: Editorial Universitaria, 2006).
- 7 T. Hunt, "Rethinking the fall of Easter Island", *Scientific American* 94, September/October 2006, accessed from American Scientist online, 9 April 2007.
- 8 Rano Raraku has a dramatic reed-filled lake in its crater and in this parallels the volcano at Rano Kau on the west tip of the island. Rano Kau is associated with the ceremonial village of Orongo and the Bird Man cult, which is considered to have succeeded the main phase of *moai* production. In an island so lacking in fresh water resources it would seem likely that both of these dramatic crater lakes and their associated volcanoes would have been associated with special meanings.
- 9 K. Routledge, *The Mystery of Easter Island*, 197 (Rapa Nui: Rapa Nui Press, 2005: facsimile of the 1919 edition).