



NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION MONOGRAPH 19:
Michael W. Graves and Roger C. Green (eds), *The Evolution and Organisation of Prehistoric Society in Polynesia*



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THE EVOLUTION AND ORGANISATION
OF PREHISTORIC SOCIETY IN
POLYNESIA

Edited by Michael W. Graves and Roger C. Green

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NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION
MONOGRAPH

THE EASTER ISLAND PREHISTORIC SEQUENCE AND DEVELOPMENTS IN ITS SETTLEMENT PATTERN

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This summary paper reports the analysis and interpretation of archaeological data recovered after 15 years of permanent research conducted by the Archaeological Survey of Easter Island, a large scale programme which will eventually cover the entire island. The basic objective of the survey is to obtain a systematic and consistent record of the archaeological remains of Easter Island's prehistoric culture.

For the purposes of the survey, the island was divided into 35 arbitrary quadrangles (see Van Tilburg, this volume, Fig. 9.1) using advance sheets of the 1:10,000 contour map prepared from 1965 aerial photographs by the Servicio Aerofotogrametrico de a Fuerza Aerea de Chile. Each quadrangle sheet was enlarged to a scale of 1:5000 to enable the location of individual house sites and constituent features on complex sites.

Originally designed by Dr W. Mulloy (Mulloy and Figueroa 1966), this systematic effort was initiated in 1968 by P. McCoy and W. Ayres with the study of the south-west corner of the island (McCoy 1976). This survey, undertaken with the straightforward aim of obtaining a catalogue of sites, covered an area of 19 km² and recorded 1733 archaeological sites. The fieldwork employed a descriptive approach framed within the proposed settlement pattern analysis described below.

During a period of 15 years of continuous fieldwork, between 1976 and 1990, almost 100 km² have been intensively surveyed by the author and Claudio Cristino, resulting in the discovery, plotting and recording of approximately 14,000 archaeological features and sites (Cristino *et al.* 1981).

The landscape within each quadrangle was systematically and carefully searched for any evidence of prehistoric human activity. Site locations were plotted on topographic base maps; the emphasis of data collection was to systematically record the spatial distribution of constituent features of archaeological sites and to make detailed descriptions and precise measurements of individual structures. Mapping complex sites, rock art, stone statues

(*moai*) and the main ceremonial structures (*ahu*) was emphasised. Also, great attention was paid to the recording of environmental, ethnographic and ethnohistoric data. Some test excavations were carried out on features without clear surface indications of possible use or function.

To date, including the area surveyed in 1968, approximately 77% of the island has been investigated. A large corpus of data, currently under analysis, describes the exact location and specific characteristics of approximately 17,000 archaeological features.

The survey fieldwork adopted several problem orientations (temporal, spatial, typological) common to settlement pattern analysis. Further analysis addressed the role of environmental and economic factors in the spatial distribution of site types and settlement patterns reflective of Easter Island's prehistoric socio-political system.

The analysis and interpretation of the 1968 survey data (McCoy 1976) suggested a progressively larger population moving in the direction of an ecological and food resource crisis as it engaged in more intensive land use. This resulted in the gradual depletion of soil, vegetation and water resources. The limited extension of this initial survey inland and the assumption that the density of occupation decreased sharply with distance from the coast led McCoy to suggest a hypothetical settlement pattern where the effective settlement area was confined to a narrow coastal area. The interior of the island was thought to be only lightly inhabited due to several restrictive ecological factors.

The results of our research (Cristino and Vargas 1976-1986; Cristino *et al.* 1981; Vargas 1987-1989) in which extensive areas of the island were surveyed refute this model. Archaeological and ethnographic data indicate that the entire island was intensively utilised for residential purposes in prehistoric times.

The prehistoric society of Easter Island appears to have been highly stratified, with several paternal descent groups - tribes or *mata* - originating from a common ancestor. Each

tribe included a number of lineages resulting from a continuous process of population expansion and segmentation. The island was divided into districts and, at one time, each tribe had its own territory. These territories included a section of the coast and a portion of land towards the centre of the island, much like land holdings on other Polynesian islands. In the most favourable places on the coast, generally close to a fresh water source, were the principal religious, political and socio-economic centres of local descent groups within each territory. The most important structure was the *ahu*, upon which was placed the monolithic stone sculpture, the *moai*.

A research programme was developed with the basic aim of obtaining a geographical characterisation of a section of the island which included some of these territories and of studying the relation of these variables to the settlement patterns of that area. Eight quadrangles, covering the concentric ecological zones of the island within an area of 41 km², were selected as the study area. The data recovered after surveying these quadrangles describe the location and specific characteristics of 7903 archaeological features, including 396 statues in Rano Raraku quarries.

Four longitudinal profiles describe a broad section of the island that includes the Maunga Tere Vaka volcano (510 m above sea level) and the south coastal plains, reflecting the altitudinal development of the study area. The analysis of

the information provided by these profiles, correlated with landscape variables that reflect general characteristics of geology, gradients, vegetation and carrying capacity of this section of the island, led us to identify two different geographical units, 'coastal' and 'interior' zones, which can be recognised around the volcano from Hanga Roa on the east coast to Ovahe on the north coast.

The coastal zone is bounded by the volcanic platform that joined together the three main volcanoes on the island, Poike, Tere Vaka and Rano Kau, while the interior zone is 160 m above sea level. These units or zones can be clearly differentiated in terms of their soil categories and profiles, rainfall records and potential vegetation.

A preliminary analysis of the archaeological data of these quadrangles allows us to classify all of the recorded features into functional descriptive categories or site types in relation to their spatial distributions in the study area (Table 10.1). Two special categories, 'miscellaneous' and 'unclassified', include those features without clear identification of use or function and destroyed sites, respectively.

Through the spatial distribution of certain categories or site types, it has been established that the relative number of houses is very similar within coastal and interior zones, but there are significant variations in house types between those

Type	Study area	
	'Interior'	'Coastal'
1. Houses	41.8%	58.2%
2. Earth ovens	4.6%	95.4%
3. Agricultural structures	3.4%	96.6%
4. Chicken houses	1.9%	98.1%
5. Rockshelters	12.5%	87.5%
6. Water holes or wells	29.0%	71.0%
7. Water catchment basins	18.2%	81.8%
8. Rock art (groups)	30.2%	69.8%
9. Boundary, tapu or fishing markers	10.7%	89.3%
10. Religious structures and burials	18.4%	81.6%
11. Stone statues (<i>moai</i>)	3.0%	97.0%
12. Stone topknots (<i>pukao</i>)	-	100.0%
13. Stone towers (<i>tupa</i>)	-	100.0%
14. Quarries and lithic workshops	53.8%	46.2%*
15. Major stone enclosures	76.7%	23.3%
16. Roads and stone alignments	68.2%	41.8%
17. Miscellanea	71.9%	28.1%
18. Unclassified	18.3%	81.7%

*Includes the quarries of Rano Raraku as one site.

TABLE 10.1. Types of features and their spatial distributions in the study area.

zones. It is noteworthy that more than 95 percent of the earth ovens, agricultural structures and chicken houses are located in the coastal zone. Moreover, certain features associated with boat-shaped houses (*hare paenga*), the red scoria topknots (*pukao*) and stone towers (*tupa*), are found exclusively in the coastal areas. Other structures, such as rectangular and circular houses, major stone enclosures, stone alignments and clusters of small circular structures (less than 1 m in diameter), are characteristic features of the interior of the island.

Thus, it has been established that there are significant differences between coastal and interior zones in terms of the distribution of site types. That is, religious monuments, household clusters bounded by elliptical houses, earth ovens, chicken houses and agricultural structures and gardens are the main components of settlement in the coastal zones. In contrast, household clusters defined by rectangular and circular houses in various combinations with other archaeological features are the main components of settlement in the interior zones. These data suggest a zonation of activities.

Also, it is important that a direct and significant correlation has been established between those geographical or ecological units and the differences observed in settlement patterns between coastal and interior zones. Therefore, the model suggested for the interpretation of the archaeological evidence is supported by geographical and ecological information. It shows that altitude, rainfall and location and exploitation of resources were important factors that contributed to the structure of the prehistoric settlement pattern on the island.

Preliminary dating of habitation sites contributes to the understanding of cultural processes and dynamics of Easter Island's prehistoric culture, and suggests that complexes situated in both the interior and the coastal zones could have been occupied contemporaneously as an interrelated territorial unit. If so, then this would indicate there was a well-defined relationship, based on somewhat different functions and specialised activities, across these two occupied zones within a tribe's territory. Perhaps food and other resources occurred in the different microecological zones which were then exploited by non-corporate, specialised groups (Cristino and Vargas 1980).

It is suggested that the excessive emphasis of this culture on statue carving and *ahu* construction involved the demand through time for more people and resources. This contributed to the disorganisation of the whole system of relations reflected in the settlement pattern analysis. Also, tensions created by overpopulation took the form of continuous conflicts among local groups for the control of

resources within an increasingly impoverished environment. These conditions, plus those resulting from over-exploitation of resources (and perhaps a period climatic change or oscillation) may have been the principal factors that generated the crisis which altered the long established socio-political and religious organisation of Easter Island's prehistoric society.

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