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ABSTRACTS FROM THESES AND DISSERTATIONS, UNIVERSITY OF AUCKLAND, 2010-2012

KANE DITCHFIELD

Beresford, Casey, 2011. Understanding human behavioural change and shell mound location at Albatross Bay, Cape York, Australia. MA thesis, Anthropology, University of Auckland.

Human behavioural change is often attributed to environmental causation. Environmentally deterministic theories emphasise that the patterning of archaeological material remains reflects a one-way relationship between people and the environment. The correlation of geographic features with archaeological remains produces models that aim to predict the locations of past cultural behaviour. These models often neglect the environmental context of archaeological site formation and as a consequence are unable to accurately locate archaeological sites or explain their visibility. Understanding site location requires a theory that incorporates the variability of environmental conditions, where and when human behaviour occurred and knowledge of how archaeological site visibility today is a product of post-depositional processes. An approach for understanding both human behavioural change and archaeological site location is applied to the shell mounds of Albatross Bay, Cape York Peninsula, Australia, to determine whether human ecodynamics theory can contribute to the improvement of cultural heritage management practices. Literature sources provide dated geomorphological and sedimentological proxy data indicative of environmental change and the variable availability of the marine bivalve, *Anadara granosa*. Archaeological site patterning, formation and visibility is interpreted in the context of palaeoenvironmental change and made comparable through the systematic recalibration of radiocarbon determinations. Results show that shell mounding activity during the late Holocene cannot be explained using linear explanations of causation. Simplistic models of environmental change neglect the spatial and temporal scale at which processes interact and produce partial understandings of human-environmental interaction. High resolution data

sets are required for interpretation of meso and semi-micro-scale interactions between people and place at Albatross Bay. An alternative is to use multiple approaches to investigate localised areas, or microenvironments, in order to control for variability operating at greater scales.

Buhring, Karolyn, 2011. Ceramic production and inter-island interaction: Geochemical analysis of ceramic assemblages from the western Solomon Islands. MA thesis, Anthropology, University of Auckland.

This work constitutes a study of ceramic production and inter-island interaction during the Late/Post Lapita and Historic periods in the New Georgia Group, Western Solomon Islands. Lapita is a cultural unit which has been associated with much of the colonisation of the southwest Pacific region since 3500 BP. Interaction and exchange between different geographic areas and islands have potentially been critical variables in the speed of colonisation throughout this region. For many years, compositional analysis of pottery has demonstrated its utility for addressing issues of interaction through the study of archaeological materials. The study of ceramic composition has allowed archaeologists to identify transfer and movement of pottery between various locations throughout the Pacific region. However, there are still many questions regarding regional patterns of ceramic production and transfer. Unlike sites in the Bismarck Archipelago and the Santa Cruz group, the Central, Eastern and Western Solomon Islands were only occupied by ceramic producing people during the Late Lapita period, suggesting that Early Lapita populations bypassed most of this region for reasons that remain unknown. The Western Solomon Islands have a unique archaeological record with intertidal Late/Post Lapita sites containing ceramics as the only material evidence. This ceramic sequence lasted up to recent times in some places, providing an ideal context in which to study ceramic production and transfer throughout a broad period of time. Previous studies have identified that Late/Post Lapita ceramic production was mainly local. However, exotic ceramics have been found in a number of sites in New Georgia, indicating ceramic transfer possibly from outside the Solomon Islands region. It has also been suggested that during the subsequent period, ceramics were all imported from the nearby island of Choiseul, where ceramics were manufactured until recent times. Although the Roviana Lagoon presents significant ceramic evidence it lacks locally available clay materials, which indicates that these were imported from other territories. By identifying chemical and mineralogical attributes it is possible to distinguish between ceramics made from different combinations of clay and temper materials, and by comparing compositional groups with the local geology it is possible to differentiate between local and exotic ceramics. This allows the successful

determination of potential sources of origin and production centres as well as evidence of ceramic transfer at various scales. Results from this research confirm that during the early ceramic period in the New Georgia Islands, ceramic production was present at multiple locations and that ceramics were transferred at different geographic scales involving occasional long distance interactions. During the Late period, ceramic production had a more restricted occurrence and transfer networks changed and receded to become exclusively regional.

Cruickshank, Arden, 2011. A qualitative and quantitative analysis of the obsidian sources on Aotea (Great Barrier Island), and their archaeological significance. MA thesis, Anthropology, University of Auckland.

This thesis investigates the natural occurrence of obsidian on Aotea, an island situated in the outer Hauraki Gulf, off the North Island of New Zealand. There are multiple obsidian sources located on the island, of which it has been reported that some of it was exploited for use prehistorically. Although there have been basic reports made on these sources in the past, the island has never been subject to in-depth analysis. This thesis presents information pertaining to the differing quality of the obsidian that is present on the island, its abundance, availability and geochemical variation. It then takes the information gained from these analyses and compares it to archaeological obsidians recovered from six prehistoric sites located within the Tamaki region which showed that the only source that was exploited on Aotea was one which is associated with Te Ahumata, a mountain consisting of mainly rhyolitic sinter. This source was not prevalent in the Tamaki region during the Archaic phase of occupation but became the dominant source in the later Classic phase, when it became more common than obsidian from Mayor Island, New Zealand's most exploited obsidian source.

Ditchfield, Kane, 2011. Stone artefact transport and human movement in Pleistocene south-western Tasmania. MA thesis, Anthropology, University of Auckland.

Human mobility is an important behavioural process for creating variability in the archaeological record and stone artefacts represent one dataset through which mobility is often studied. However, proxies used to measure mobility are often limited by a focus on only a small portion of stone artefact assemblages (such as non-local raw material or retouched tools) and rarely measure the actual movement of people in terms of frequency, distance and direction. Instead, the actual movement of humans is considered only in very general terms. This has been the case in south-western Pleistocene Tasmania where faunal studies demonstrate important systems of human movement but

the stone artefact proxies for mobility are restricted by these limitations. To overcome these limitations a methodology developed by Dibble and colleagues (2005) is applied to Pleistocene stone artefact assemblages to quantify artefact transport as a proxy for human movement. A correction for the loss of volume is made to the methodology and methods for distinguishing artefact transport behaviour are proposed. This approach is applied to Pleistocene stone artefact assemblages from three south-western cave sites: Bone Cave, Mackintosh 90/1 and Kutikina. Dataset limitations are overcome via the application of regression analyses and other methods. The results suggest that cortex and volume are under-represented for almost all assemblages at the three cave sites. This is interpreted to indicate the removal of large cortical flakes in almost all instances. Along with skeletal elements from Bennett's wallaby and other prey species, stone was transported to caves in the form of cortical nodules (often from local sources) where, at the end of each occupation, cortical flakes made of local raw material were removed. This suggests that the local raw material was extensively transported away from cave sites for anticipated use elsewhere. As such, the stone artefact assemblages at cave sites are more reflective of activities that took place away from caves rather than those that took place at them. This indicates that human mobility was an important pattern in Pleistocene south-western Tasmania.

Douglass, Matthew, 2010. The archaeological potential of informal lithic technologies: A case study of assemblage variability in western New South Wales, Australia. PhD thesis, Anthropology University of Auckland.

This thesis addresses the research potential of informal lithic technologies through a case study of surface deposits from western New South Wales (NSW), Australia. The defining characteristic of the lithic remains of the region is a dearth of formalised patterning. As a consequence, researchers have historically equated these remains with a casual approach to lithic technology where it is often assumed that artefacts were produced on an as needed basis. This apparent simplicity is in marked contrast to the demanding environment of the region. Water and food resources are extremely limited and historic observations indicate that Aboriginal populations coped with these conditions by employing strategies of land use based on short-term occupations and high mobility. It is therefore an anomaly that populations living under such conditions would be so unconcerned with the organisation of their technology. An exploration of this anomaly guides the research presented in this thesis. Was the organisation of Aboriginal lithic technology truly simple or instead is the perception of simplicity an artefact of previous interpretation? The goals of this thesis go beyond questioning the perception of simplicity to the larger question of how

informal technologies can be used to understand past behavioural organisation. To investigate these questions, this thesis makes use of an abundance of assemblage data gathered by the Western NSW Archaeological Programme. The results of this research indicate that while the vast surface record of the region may present what appears to be a largely undifferentiated record, contextualisation shows that Aboriginal occupation of the region was anything but uniform. Chronologies developed through extensive radiocarbon dating demonstrate that periods of increased aridity are correlated with decreased evidence of Aboriginal occupation, thus suggesting territorial reorganisation in the face of environmental deterioration. The study of lithic technological organisation and the curation concept provide a theoretical perspective with which to explore the possibility for similar dynamism in the largely informal lithic technologies of the study region. While current studies of stone artefact curation are largely based on retouched tools, the curation process may exist in the absence of retouch. A methodology based on the quantification of cortical surface area is presented as one means through which curation without retouch may be explored. This methodology is based on the principles of solid geometry and enables comparison between the quantities of cortex observed in lithic assemblages and that which should be present given the size and shape of the stone nodules from which artefacts were produced. Deviations between observed and expected values indicate the effects of artefact transport on assemblage formation. Application of the cortex methodology indicates that cortex is extensively underrepresented in the NSW assemblages, meaning artefacts were transported away from their place of production. This result is in marked contrast to the perception of Aboriginal technological expedience. Further investigation of the cortex methodology, the development of refined techniques and the completion of additional fieldwork enabled a more in-depth test of the initial result. Viewed from a variety of perspectives, further study supports the initial interpretation. Utilising spatial patterning in assemblage cortex proportions, the data for this study is then used to investigate the scale of Aboriginal mobility. Interpretation of this patterning provides insights into the organisation of land use at a landscape scale and thus demonstrates a greater appreciation of the potential for informal lithic technologies to inform on the organisation of the past.

Emmitt, Joshua, 2011. Investigating ceramics from the Neolithic occupation of Kom W, Fayum, Egypt. MA thesis, Anthropology, University of Auckland.

The occupation of Kom W (Fayum, Egypt) is not well understood. Previous investigations have suggested the occupation may be representative

of a range of sites, from a temporary encampment to a village. This study uses ceramics from museum collections to investigate the occupation of Kom W. The method proposed makes use of an entire ceramic assemblage, regardless of its position or state of preservation. This method is used to estimate the number of vessels represented by sherds, by using geometric data from complete vessels from the same assemblage. The results of this study suggest some vessels were used for storage on Kom W, which has implications for the nature of occupation during the Neolithic.

Falk, Ben, 2011. Geochemical characterisation of Lapita ceramics from the Reef-Santa Cruz Islands: An analysis of the SE-SZ8, SE-RF2 and SE-RF6 ceramic assemblages. MA thesis, Anthropology, University of Auckland.

The Lapita settlements in the Reef-Santa Cruz Island group have been recognised as pivotal in the human colonisation of Remote Oceania. Since the discovery of the SE-SZ8, SE-RF2 and SE-RF6 Lapita sites by Roger Green in 1971, a large comparative ceramic assemblage became available for tracing the directional dispersal of these people through the entrance to Remote Oceania. This archaeological research project has combined the use of an electron microprobe with a portable X-ray spectrometer and ceramic temper petrography to geochemically profile decorated and plain pottery from these ceramic assemblages. The research aim of this study was to geochemically characterise these ceramic assemblages and identify temporal differences that might directly reflect more widespread changes in regional social interactions during the first 700 years of human settlement in Remote Oceania. Through an analysis of over 1000 decorated and plain ware sherds from these sites the distribution of five ceramic geochemical composition groups were followed within the three site assemblages. The results of this study have demonstrated that an accumulation of ceramics of different geochemical origin from Nendo Island is present within these sites to varying degrees over time. These changes are likely due to a combination of social choice and access to local ceramic resources. Thus, differential access or social choice of ceramic sources over time would substantially influence the outcome of a decorative seriation analysis, if it is assumed that different sources of ceramics will vary in their production of decorative designs. While the temporal evolution of Lapita decorative designs is recognised as an independent process easily viewed within the greater context, these observations may have direct repercussions on previous decorative and vessel type seriation studies used to chronologically compare these assemblages.

Flaws, Andrew, 2010. The identification and analysis of Rapa Nui (Easter Island) rock gardens by satellite remote sensing. MA thesis, Anthropology, University of Auckland.

Rock gardens were an agricultural innovation developed by the prehistoric inhabitants of Rapa Nui to mitigate the effects that deforestation and marginal rainfall had on agricultural productivity. These features have recently been recognised within the archaeological literature but as yet, no island-wide survey has been performed. The objective of this research is to identify the distribution and density of rock gardens throughout the island using high-resolution multispectral World View2 satellite imagery to perform supervised classifications. This allows the utility of the imagery product in identifying archaeological features exhibiting a high degree of spatial and spectral variation to be tested. Classification results were then used to analyse the spatial patterning of rock gardens in relation to elevation and territorial zones.

Unsupervised classification algorithms and principal component analysis proved insufficient in identify rock gardens due to the high degree of spectral variation within and between environmental regions. This issue was overcome by employing a priori knowledge of rock garden location to perform geographically stratified supervised classifications. The accuracy of three classifications was assessed and it was found that the two most successful of these represented good predictive models of rock garden distribution. Comparing these models to elevation and territorial zones showed that significant variation between zones occurs. The highest density of rock gardens is observed within the lowlands and coastal margins with 350 m marking the approximate upper elevation limit. Territories based on previously estimated boundaries (Stevenson 2002) were found to have differential access to land suitable for lithic enhanced agricultural practices.

Hendy, Jessica, 2011 The use of Raman spectroscopy for obsidian provenance studies in New Zealand. BA (Hons) dissertation, Anthropology, University of Auckland.

This research is a pilot study to examine whether Raman spectroscopy is able to discriminate between different zones of New Zealand obsidian sources. Obsidian artefacts are an important aspect of the prehistoric material culture of New Zealand and the investigation into the provenance of these artefacts can reveal information on trade and exchange patterns in New Zealand's prehistory. In order to obtain provenance data, adequate methodological procedures are required. This study contributes to the development of those methods. Raman spectroscopy is a non-destructive, rapid and inexpensive analytical technique that has been applied to a wide range of archaeological investigations. Forty-

two samples from four source zones were analysed by Raman spectroscopy and their spectral data manipulated with principal component analysis (PCA). In addition, the same samples were analysed with Fourier-transform infrared (FT-IR) spectroscopy to potentially provide a second layer of discriminatory information and to reveal aspects of obsidian chemical makeup. This research found that Raman spectroscopy was able to discriminate between some source zones, although the extent of this discriminatory power requires further investigation in order to determine whether it could be adopted into New Zealand's sourcing methodologies. This research demonstrates the applicability of Raman spectroscopy to archaeological data, and demonstrates that Raman spectroscopy reveals information about the molecular composition of obsidian.

McAlister, Andrew, 2011. Methodological issues in the geochemical characterisation and morphological analysis of stone tools: A case study from Nuku Hiva, Marquesas Islands, East Polynesia. PhD thesis, Anthropology, University of Auckland.

In this thesis, three methodological issues pertaining to the geochemical analysis and characterisation of stone tools were investigated. The first consisted of evaluating the potential of portable x-ray fluorescence (PXRF) analysis as a means of characterising archaeological basalt adzes. Several of the methods currently used to analyse stone tools require the partial destruction of specimens and are comparatively expensive, factors which tend to impose limits on the quantity of specimens that can be analysed. In contrast, PXRF technology is relatively inexpensive and non-destructive. The initial testing of the PXRF instrument was unsatisfactory and found the in-built calibration software to be the main limiting factor. Substantially improved results were obtained by processing the raw spectra data independently. The second part of this study assessed multivariate methods of discriminating among volcanic stone sources. Two techniques, discriminant function analysis (DFA) and classification tree (CT) analysis were examined. The implementation of CT analysis developed in this study incorporated support vector machine (SVM) algorithms to determine optimum node divisions. Both of the techniques performed well. However, CT analysis was found to possess several advantages over DFA: it was more robust to unequal and skewed data distributions and the tabular and graphical results were conducive to interpretation and evaluation. The third part of this research involved applying the methodological findings to investigate the distribution of stone tools on the Marquesan island of Nuku Hiva in East Polynesia. Stone adzes collected from late-prehistoric (i.e. post-1600 A.D.) contexts at four valleys on Nuku Hiva were geochemically and morphologically analysed. The assemblages were found to have derived from six distinct stone sources, five

local Nuku Hiva sources and one on Eiao, an island approximately 100 km to the north. Almost one half of the adzes were imported from Eiao and were common in all of the valleys. In contrast, tools made from local stone were not widely distributed far from their source areas. The morphological analysis found that, while the full range of forms were made from both local and imported materials, stone from Eiao appears to have been preferred for some adze forms that are thought to be functionally distinct.

McNutt, Adele, 2011. Writing a family history for the Māori kumete: an exercise in context. BA (Hons) dissertation, Anthropology, University of Auckland.

The objects in a museum are isolated from their past. They reside behind the glass of the display case with their histories given, to a greater or lesser degree. Some objects arrive at a museum with a full biography; other objects have no record of their past at all; these objects seem bereft of context. When there is no biography for a particular object, however, a generic family history for the class of object can be written. Certain theoretical approaches in material culture allow for a deep reading of an object, which can help contextualise an artefact when it has no known history. By drawing together all strands of information it is sometimes possible to give the object its place in society, to document its manufacture, and to narrow down its geographical location. Inspired by the triangulation method developed by Patrick Kirch and Roger Green (2001), this study uses four different methods of investigation to draw a biography for the Māori kumete (wooden bowl). The objective is to draw a generic biography that sets the kumete in a technical, societal, historical, and linguistic context, using archaeological records, linguistic archives and studies, ethnographic writing, and information drawn from replication exercises. The outcome clearly confirms, as Kirch and Green have shown, that multiple avenues of investigation are always better than one.

May Ricketts, Sarah, 2011. A technological analysis of a stone artefact assemblage from Twilight Beach, Northland, New Zealand. BA (Hons) dissertation, Anthropology, University of Auckland.

This dissertation is a technological analysis of the stone tool assemblage from the Archaic midden site of Twilight Beach, Northland, New Zealand. The aims of this project were to use quantitative methods to analyse the stone artefact assemblage from Twilight Beach, in an attempt to identify and measure the degree of mobility practiced by the inhabitants. It has long been established in New Zealand archaeological studies that palaeoeconomic strategies and prehistoric subsistence patterns were dictated by a degree of mobility in con-

nection with the collection of resources. However, the large regional variations in climate, resources and environmental conditions have meant that no concrete New Zealand-wide models of subsistence, or absolute measures of mobility, have been established to investigate the role and degree that mobility played at a regional scale.

A range of variables are considered, including the use of raw material to produce artefacts, the degree of reduction and discard of artefacts, and evidence of retouch to investigate if and how stone artefacts were reused. The measurements taken were related to the attributes that affect morphology and those related to the size and completeness of artefacts in the assemblage. The assemblage of Twilight Beach is then compared to the obsidian assemblage from the more sedentary site of Kohika in the Bay of Plenty, in an attempt to establish differences between two assemblages distinguished from one another by varying degrees of associated mobility.

It is hoped that such an analysis will contribute to the understanding of Archaic Northland settlement patterns and mobility, and will establish a methodology that may be applied to other such sites in an effort to identify and measure the degree of associated mobility.

Mulrooney, Mara, 2012. Continuity or collapse? Diachronic settlement and land use in Hanga Ho'onu, Rapa Nui. PhD thesis, Anthropology, University of Auckland.

The archaeological landscape on Rapa Nui contains a palimpsest of surface archaeological features, reflecting a long history of settlement and land use. The island is often portrayed as the locale of a dramatic societal collapse that was triggered by overpopulation and environmental degradation, where the islanders committed 'environmental suicide' during the late pre-European contact period (before AD 1722). Although this scenario has increasingly been called into question, many researchers still suggest that Rapa Nui society collapsed in late prehistory. However, no studies have provided sufficient evidence for or against a cultural and ecological collapse on the island prior to European contact. This thesis critically explores the archaeological evidence for cultural change by assessing the temporal and spatial components of settlement and land use in the Hanga Ho'onu Project Area on the north coast. The analysis includes a GIS-based spatial analysis of surface archaeological features and the chronometric dating of selected areas of the landscape using obsidian hydration dating and radiocarbon dating. The results are placed into an island-wide context to explore settlement and land use on a broader regional scale. The results of this study suggest that Rapa Nui settlement and land use

is marked by continuity rather than punctuated, detrimental change during the late pre-European contact period.

Nagaoka, Takuya, 2011. Late prehistoric-early historic houses and settlement space on Nusa Roviana, New Georgia Group, Solomon Islands. PhD thesis, Anthropology, University of Auckland.

This thesis examines house sites, settlements, and landscapes in the late prehistoric-early historic period in Roviana, New Georgia Group, the Solomon Islands. The focus of this study is Nusa Roviana, a small barrier island in the Roviana Lagoon, where past archaeological investigations documented large nucleated settlements. Those settlements were the politico-religious and residential centres of powerful coastal polities which conducted large-scale headhunting expeditions to neighbouring islands during the 19th century. Employing a household-archaeology approach, in combination with a 'house society' perspective and practice theory, I investigate how houses and settlement space were socially constructed through everyday activities which meanwhile structured them, and were eventually transformed by them. Patterns of household variability within and among house sites are examined to understand their relation to spatial organisation, temporal change, and socioeconomic diversity at the community level. This research provides a detailed picture of daily activities and social interaction in early historic villages, when islanders' active interaction with Europeans led to intensification of chiefs' political-economic activities, which revolved around shell valuable production and headhunting, and this further accelerated social stratification. Archaeological, historical, ethnohistorical, and ethnographic data is synthesised to construct a model of changes in settlement space which reflected the long-term processes of economic, social, and ideological transformation. Development of large nucleated settlements was fundamentally related to dynamic socio-political process in late prehistoric to early historic Roviana society, in which social elites strove to construct an enduring house to maintain linkage to their ancestors and transmit the estate and its status to future generations. The emerging elites used spatial settings in settlement space to naturalise social differentiation and legitimate their political authority in a socially dynamic period during the 19th century, which in turn created, through time, a hierarchically organised settlement structure. Differing spatial and material patterning among individual settlements is interpreted as reflecting variation in political strategies and socio-political structure of coastal polities.

Parker, Daniel, 2011. The complexity of lithic simplicity: Computer simulation of lithic assemblage formation in western New South Wales, Australia. MA thesis, Anthropology, University of Auckland.

One of the fundamental tenants of the explanation of hominin evolution is the assumption that the complexity of behaviour and cognition of ancient hominins is directly related to the morphological complexity of the stone tools they used. However, it has recently been suggested that the significance of stone artefacts is not defined by the complexity of their morphology, but by the context of their use in past behavioural systems. This is supported by research that demonstrates a significant deficit of cortex in lithic assemblages from western New South Wales, Australia, with the implication that this represents the substantial selection and transport of morphologically simple, large and relatively thin flake blanks away from assemblage locations as part of a complex system of landscape occupation based around high mobility. If correct, this explanation has implications for the analysis and interpretation of the behavioural and cognitive significance of stone artefact assemblages the world over. This study uses computer simulation to test assemblage patterning and the explanation of the long-term strategic behaviours that are responsible for lithic assemblage formation in western New South Wales. The simulation is designed to determine the size and shape of the flakes that are likely to have been removed from assemblage locations, and the extent of artefact removal that is indicated by the cortex ratio. Simulation results confirm the causal explanation of the assemblage patterning and indicate that this behaviour operated at a scale that resulted in the removal of substantial quantities of flake artefacts from the assemblage locations. The wider implications of these results challenge some of the fundamental assumptions underlying current approaches to stone artefact analysis and the interpretation of hominin evolution.

Phillipps, Rebecca, 2012. Documenting socio-economic variability in the Egyptian Neolithic through stone artefact analysis. PhD thesis, Anthropology, University of Auckland.

Models of socio-economic change in Neolithic Egypt are thought to relate to a complex relationship between environment, economy and social context. The development of the Egyptian Nile Valley Neolithic in particular is believed to have been influenced by a combination of the early Holocene pastoral adaptation of the eastern Sahara or the Neolithic of southwest Asia. These influences include plant and animal species and artefact types forming a Neolithic package of sorts. This package either diffused or was moved into the Egyptian Nile Valley by migrants during the mid-Holocene. The Neolithic package was believed to also include either frequent human movement related to

pastoralism like that associated with the Sahara or lack of movement and village-based settlement like that associated with southwest Asia. Previous research has made general statements regarding likely levels of mobility; however, very few studies have tested this model with empirical data that documents actual human movement. My thesis tests this model using a method of stone artefact analysis dependent on all elements of an assemblage, particularly flakes and cores, to document human movement. The original hypothesis suggested that an examination of three assemblages would show results consistent with this model where either Saharan or southwest Asian socio-economy predominates. Following traditional settlement reconstruction, an assemblage in the eastern Sahara would suggest movement and an assemblage in the Nile Delta, in closer geographic proximity to southwest Asia would suggest less movement. The Fayum Depression, which is situated west of the Nile Valley on the edge the eastern Sahara, but close to the Delta, might be expected to fall somewhere in between. This model of settlement is closely tied to climatic reconstructions for the Sahara, Nile Valley and Delta, where environmental variables may have constrained human movement. Results contradictory to this hypothesis suggest human movement, settlement pattern, or use of landscape is very much dependent on highly localised environmental and socio-economic context, and a wide range of variability in adaption can be expected during the mid-Holocene in Egypt.

Preston, Alison, 2011. Element choice, analytical bias and archaeofish interpretations: A case study from the Cook Islands. MA dissertation, Anthropology, University of Auckland.

Identification of fish bone from archaeological contexts to taxa can provide important inputs into interpretations of past human behaviour, informing debates about resource availability, dietary preferences, technological and cultural developments, and environmental background. While European and North American researchers are able to identify a wide range of skeletal elements, high levels of fish diversity mean that Pacific Island assemblages usually rely upon a limited set of cranial elements for identification to family, supplemented by a small range of elements distinctive to particular taxa (the special bones). In this study, a portion of the large fish bone assemblage from the Moturakau rockshelter, Aitutaki, Cook Islands, was analysed to determine the costs and benefits of identification of additional skeletal material.

Using a small range of additional elements, a substantial number of additional specimens were identified to taxa, providing a more secure and representative sample of the population of fish utilised during past human fishing activities, supporting trends identified during earlier studies, and

highlighting bias in the standard methodology due to variable representation and identification of robust and fragile elements. The use of a wider range of elements for identification to taxa proved particularly useful in identifying changing taxonomic representation in smaller samples, including distributions of lower-ranked taxa and identification of additional taxa. The newly-identified specimens thus provided a more intensive utilisation of an existing resource, supplying more information about past human activities at Aitutaki without requiring further location or recovery of archaeological materials. Identification of additional elements can therefore enlarge the identified proportion of an assemblage, providing a firmer basis for conclusions about past human activities, and identifying additional taxa, often of recognised economic importance.

Ross-Sheppard, Callan, 2011. X-rays, stone tools and social differentiation: The characterisation and sourcing of the obsidian assemblage from the Talepakemalai (ECA) site by portable x-ray fluorescence. BA (Hons) dissertation, Anthropology, University of Auckland.

At the Lapita-age Talepakemalai site in the Mussau Islands (Bismarck Archipelago) spatial differentiation has been identified in several artefact classes including obsidian (Kirch 2001). This spatial differentiation has been suggested to possibly be indicative of some form of social differentiation in the site (Kirch 1988a). A previous study by Allen (1998) sourced the majority of the obsidian from this site using PIXE-PIGME and relative density. Allen (1998) identified a difference between a stilt structure in Area B and the other areas of the site, in terms of the relative proportions of obsidian from more distant and high quality sources. This was suggested as potentially supporting the hypothesis of social differentiation (Allen 1998). However, methodological problems related to the PIXE-PIGME and relative density techniques led to some uncertainty over the relative source compositions of the obsidian assemblages from the different areas of the site (Allen 1998). This study applies another sourcing technique, PXRF, to these obsidian assemblages and has concluded that although a difference can be identified, this difference cannot be conclusively linked to social differentiation.

Vroegob, Anja, 2010. A predictive model for rainfed agriculture on Rapa Nui (Easter Island). BA (Hons) dissertation, Anthropology, Auckland.

The potential for intensive dryland agriculture on Rapa Nui is poorly understood. A GIS-based predictive model for intensive rainfed agriculture is presented here. Based on a predictive model for agriculture on Hawai‘i developed by Ladefoged et al. (2009) and using rainfall, elevation and substrate age as variables, the areas on the island capable of supporting intensive agricul-

tural production are identified and quantified. 95 km2 of the 164 km2 island are found to have potential for intensive dryland agricultural production. The results of this model are discussed in comparison with archaeological evidence of agricultural remains. Although the previous predictive model for Hawaiian agriculture showed a good correlation between the predicted agricultural areas and the archaeological remains, in the Rapa Nui model there are a number of discrepancies between the two. These are discussed as possible problems with the model itself; however, they are also presented as instances in which environmental limitations may have been overcome by cultural ingenuity – in the form of the construction of rock gardens. This dissertation thus contributes to the wider literature and understandings of rock gardening and agriculture on Rapa Nui by providing a quantified vision of the environmental limitations on agricultural production.