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Barrett, Matthew, 2013. Flake to Core Ratios and Human Mobility: An Investigation of Stone Artefact Assemblages from Egypt and Australia. M.A. Thesis, Anthropology, University of Auckland.

Mobility is a useful but highly variable process with which to understand how people interacted with their environments in the past. Commonly cited archaeological proxies for mobility often reflect only the potential to move or may represent different behaviours in different contexts. This can mask the range of variability in past human behaviour.

An alternative approach is to investigate independent, empirical evidence of human movement which may then be related to broader contextual variables such as environment and economy. Stone artefacts are useful as they can be shown to have moved from one point to another. This thesis focuses on the patterning in flake to core ratios as a direct proxy for human movement. Late-Holocene Rutherford's Creek, Australia, and mid-Holocene Fayum, Egypt, are two locations with extensive surface stone artefact assemblages, where the level of mobility and the contexts in which this occurred are known. Analysing flake to core ratios from known contexts allows a detailed understanding of how the variance in values might be interpreted.

A method is presented for understanding the effects of initial cobble size, reduction intensity and artefact movement on the flake to core ratio in each region. The results suggest that a large amount of the variance in values is explained by differential initial cobble size and show that similar values in different contexts can reflect different behaviours. At Rutherford's Creek, people were highly mobile and transported flakes. In the Fayum, they were less mobile and transported cores. Overall, approaching mobility as outlined in this thesis allows a more nuanced understanding of how patterning in stone artefact assemblages relates to human mobility and provides a glimpse into the intricacies of human behaviour and the range of unique ways in which people interacted with their environments in the past.

Kienholz, Mary, 2013. The Characterisation of Pounamu Sources in New Zealand Using PXRF. M.A. Thesis, Anthropology, University of Auckland.

Nephrite jade is known as pounamu by New Zealand Māori and was an important material used in the manufacture of ornaments and tools and retains significant cultural value today. The only known pounamu sources are in New Zealand's South Island; however, the presence of pounamu artefacts is prevalent in sites all over New Zealand. For this reason, the ability to determine the original source of pounamu artefacts would provide archaeologists with valuable information regarding prehistoric trade networks in New Zealand.

A review of the existing methods for sourcing this material reveals that there is a lack of non-destructive approaches. Non-destructive approaches that do exist are based on the identification of visual properties. Though there has been some success attributing source on the basis of visual properties, this method requires the experience of a specialist familiar with New Zealand pounamu sources. Alternative methods, which have a destructive component, are not ideal in an archaeological context. This thesis explores the application of non-destructive portable X-ray fluorescence (XRF) in an effort to discriminate between different pounamu source regions in the South Island of New Zealand. Specimens from different known pounamu sources were analysed using a Bruker Tracer III-SD portable X-ray fluorescence (PXRF) analyser. The geochemical data of each specimen was recorded with its known source information.

Another component of this thesis looks at pounamu artefacts from the Oruarangi site. Artefacts from the Oruarangi collection at the Auckland Museum were analysed using PXRF. The source of the artefacts was then predicted using multivariate statistics and the geochemical data obtained from the pounamu specimens of known source.

Phillips, Natasha, 2013. Assessing the Temporal Foundations of Supra-Regional Models for Early to Mid-Holocene Climate-Cultural Change, Northeast Africa. M.A. Thesis, Anthropology, University of Auckland.

Cultural-climatic research of the Neolithic expansion in Northeast Africa is situated within a long history of archaeological investigation and debate. Modelling of this expansion is influenced by global academic trends in the conceptualisation and interpretation of the process of Neolization. Traditionally perceived as a unidirectional, dualistic transition from hunter-gathering to agriculture, technical and conceptual advances over the last two decades, alongside increased access to high resolution data, have prompted the recognition of socio-economic change as a highly variable and dynamic process,

one that is neither inevitable nor motivated by a single external or internal force. However, within the wider context of Mediterranean Neolization, Northeast Africa remains *terra incognita*. Northeast African evidence of localised variability that fails to fit into traditional notions of Neolization, together with discrepancies between the timing and character of existing reconstructions for Early to Mid-Holocene cultural-climatic change, calls into question the way in which radiocarbon data are employed as accurate temporal and spatial indicators of the emergence of agro-pastoralism. The aim of this study is to investigate these discrepancies by assessing the integrity and reliability of 935 uncalibrated radiocarbon determinations and their associated calibration indices from 13 regions in Northeast Africa. In order to evaluate the protocols involved in the original sampling and recording of these data, and the manner in which ^{14}C samples are linked to both their cultural and non-cultural contexts, a detailed assessment of the current datasets for both Nabta Playa and the Fayum depression is presented. Findings indicate that limited data and an overrepresentation of site-specific localities prevent the critical assessment of localised variability in human-environment interaction to quantitatively evaluate large-scale causal models. This underscores the generalist nature of these models and the degree to which radiocarbon data are essentialised to formulate universalist explanations of the emergence of agriculture in Egypt. A better understanding of the formation of the archaeological record, along with the standardisation of sampling techniques within, and between, projects, is required in studies of the emergence of agriculture if we are to move beyond the idea of Northeast Africa as *terra incognita*.

Dawson, Laura, 2013. Marquesan pig husbandry: Investigating diet and drinking water through dental calculus. M.A. Thesis, Anthropology, University of Auckland.

The changing care of animals throughout prehistory is often linked to broader social and environmental processes. The development of chiefly hierarchies and the increasingly unstable climate in the Marquesas Islands, French Polynesia, are factors which likely influenced husbandry traditions. Specific details regarding the care can be difficult to uncover, however, and are traditionally restricted to stable isotope and osteological analyses on the animal remains. Here, dental calculus from Marquesan pig teeth was processed to extract starch grains and diatoms, direct evidence of plant diet and water consumption. Teeth from early occupation through to late pre-contact were used to understand changes through time. The yields of both were substantial enough to gather insight into this limited topic, where information was used to inform on husbandry practises, like mobility and diet. Diatom evidence indicates increasingly limited access to clean water through time; this is interpreted as a

reduction in mobility due to greater tethering and penning of the animals. The starch grain evidence, analysed through a discriminant function analysis, shows that pigs were fed agricultural cultivars throughout prehistory, including during periods when environmental conditions were poor and food resources limited.

Jones, Benjamin, 2013. Understanding the wetland agricultural systems of Waipi'o through archival and LiDAR techniques. M.A. Thesis, Anthropology, University of Auckland.

For my thesis (dissertation) I explored patterns of historic wetland Hawaiian agricultural practice within a spatio-temporal framework. Periods of *lo'i* (paddy fields composed of auwai/ditches and terrace pond-fields) construction in the Waipi'o valley were examined, to note whether significant change is present in the morphology. Doing this was significant, because little is known about Waipi'o's agricultural past, a surface record that is in danger of being modified and lost to surface archaeological inquiry. I gathered data and achieved the aims of this research through Geographic Information Systems (GIS) methodologies, utilizing archival sources and remote sensing technologies. The created temporal datasets were then used to track *lo'i* construction as far back as the historic period. In greater detail, the calculation of numerical metrics of pond-field morphology unfolded; metrics which were able to be statistically grouped. This morphological grouping analysis illustrated that pond-field morphological variance increases over time. This result stimulated further analysis to ascertain what could have motivated this change in pond-field morphology. The materialisation of *lo'i* then was linked to how cultivators maintained water flow to their taro/kalo cultivations. Water flow in the respective time periods was examined to understand how it influenced not only cultivator agency but the productivity of their respective wetland *lo'i*. This further analysis not only partially answers why a change is seen in pond-field morphology, but more importantly it adds to the interesting historical anthropological question; why and how did cultivators in Waipi'o adapt wetland production systems in a post-European contact setting.

Larson, Bernie, 2013. Transcending the Mundane: Assessing Monumentality and Intention in Shell Mound Form Using a Geoarchaeological Approach and Terrestrial Laser Scanning. M.A. Thesis, Anthropology, University of Auckland.

Large mounds of shell are identified as monumental construction and investigated as such, leading to inferences about complex social behaviours and the creation of social memory. This reflects a renewed interest in early examples of monumentality which are no longer solely associated with complex agrarian-

based societies. The allure of inferring grand human architectural design from the mounds results in the interpretation of form as directly reflective of past human behaviour. This ignores the fact that the current form of the mound is the product of multiple cultural and natural depositional and post-depositional processes. While the significance attributed to shell mounds reflects different concepts of monumentality, shape and size is used as the basis for differentiating shell mounds from other midden features. However, shell mound shape and size is rarely quantitatively assessed. This study uses terrestrial laser scanning integrated within a geoarchaeologically-based interpretive framework to investigate the formational processes that have contributed to the form of shell mounds as they are seen today. Investigating all shell mounds on an extended spatial and temporal scale presents a holistic narrative of human-environmental interaction and a better understanding of the histories represented by the mounds.

The results reflect considerable variability in shell mound shape and size. Not all mounds are 'monumental' in size and attributing differences in shell mound size exclusively to past human behaviour is unfounded. Rather, the results suggest complex formational histories for many of the mounds. As opposed to a hindrance to interpretation, this variability presents the opportunity to investigate various processes at multiple scales and hence uncovering multiple facets of the past.

Lagos, Samantha, 2013. *Living on the Edge: Reassessing Transition in the Settlement-Subsistence Strategies of Lacustrine Populations*. M.A. Thesis, Anthropology, University of Auckland.

The hunter-gatherer and agriculturalist dichotomy is an oversimplification of a diverse range of settlement-subsistence strategies. Investigations of socio-economic change in hunter-gatherer populations often rely on unilinear progressions of development based on generally accepted, but out-dated assumptions. To break down these embedded constructs, archaeologists must re-evaluate established norms. This thesis assesses the components underlying these established norms within the context of a human-environment relationship. Humans are both constrained by and act to constrain their environments. As archaeological proxies for human behaviour, material remains of technology and subsistence resources are considered in a spatially and temporally varied environmental context.

By moving away from seeking causative explanations for a transition through the hunter-gatherer-fisher-agriculturalist spectrum, this study investigates the components underlying these changes in settlement-subsistence. Accounting sufficiently for variability within the human-environment relationship requires that variability be not only anticipated, but incorporated into project methodologies. Interactions between technological, faunal, floral,

and environmental components are assessed at a local, regional, and inter-regional scale in the dynamic lacustrine environments of Fort Rock Valley, northwestern Great Basin, North America, and the Fayum Depression, North Africa.

The results reflect similarities and differences in circumstance and response in both regions. Variability in environment and climate facilitate changes across settlement-subsistence practice. However, there is not necessarily any direct or measurable long-term correspondence within or across these elements. Despite the expectation of variability under this framework, similar patterns are observed at different geographical and temporal scales. Temporal, spatial, and environmental contexts are considered as an integrated system, and demonstrate that the archaeological record is more than the manifestation of human behaviour. It is the palimpsest record of change over time through the intersecting domains of human and environment. This thesis builds a foundation for further investigation of this relationship both within and between regions around the world.