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# A Formal Analysis of Rock Art in Kuuku I'yu Ngaachi, Cape York Peninsula, Australia

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A thesis submitted in partial fulfillment of the Master of Archaeology and  
Cultural Heritage Management degree.

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Word Count: 20,857

## ACKNOWLEDGEMENTS

This thesis acknowledges that the Kuuku I'yu people, also known as the Northern Kaanju are the Traditional Owners and custodians of the country in which the rock art and shelters analysed in this thesis reside. It is through their initiative, funding and permission that this project has been possible, and I would like to take this opportunity to thank the Northern Kaanju, the Chuulangun Aboriginal Corporation and David Claudie for the opportunity to be involved in the Kuuku I'yu Rock Art project. Thank you for sharing your culture with me, it has been a great honour.

I would also like to take this opportunity to thank Dr Mick Morrison for his guidance and unwavering, always positive support. Thank you for giving me back the confidence I had lost. Thank you also to Dr Daryl Wesley for your expertise on all things rock art and rock art research. I would also like to thank my family for their unending patience and for being the best cheer squad you could ask for, especially my husband Regan.

Lastly thanks to my little passenger who's been along for the ride for the last 8.5 months. You gave me quite the absolute deadline and I appreciate you keeping the baby brain to a minimum. I can't wait to meet you.

The recent rediscovery of rock art within the homelands of the Kuuku I'yu people (Northern Kaanju) in the northern Cape York Peninsula highlands, Queensland, Australia, has prompted the Chuulangun Aboriginal Corporation to survey, study and conserve these sites. As a part of that cultural heritage management work, this thesis has the following aims: to characterise elements of rock art in Kuuku I'yu country and local trends; to examine relationships between motif types and distribution and the landscape in which they were placed; to undertake an inter-regional comparison to determine whether or the extent to which Kuuku I'yu rock art has similarities with adjoining regions and finally to establish a relative chronology for rock art in Kuuku I'yu Ngaachi. This thesis presents a formal analysis of the key features of the Kuuku I'yu rock art assemblage, as well as a comparison with rock art in the wider Cape York Peninsula, specifically in the south-eastern Peninsula including Laura, Ngarrabullgan, Koolburra Plateau and Bonny Glen. Comparison is made to the landmark 1995 regional variability study by Bruno David and David Chant to determine whether Kuuku I'yu rock art conforms to David and Chant's extant model, or whether it is a further example of regional variability in the Peninsula.

As a project initiated by the Chuulangun Aboriginal Corporation on behalf of Kuuku I'yu custodians, this thesis seeks to assist with research to understand this newly documented body of art through archaeological techniques such as digital recording, formal analysis and comparative analysis.

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## DECLARATION

I certify that this thesis does not incorporate without acknowledgment any material previously submitted for a degree or diploma in any university; and that to the best of my knowledge and belief it does not contain any material previously published or written by another person except where due reference is made in the text.

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Date 4th October 2018

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## CHAPTER ONE: INTRODUCTION

Kuuku I'yu Ngaachi is a term that refers to the country (Ngaachi) of the Kuuku I'yu, or Northern Kaanju people. Kuuku I'yu Ngaachi covers 840,000 hectares of sand ridge country and wet tropical rainforest on the Wenlock and Pascoe Rivers in the highlands of Cape York Peninsula (CYP), Australia, and part of it was declared an Indigenous Protected Area (IPA) by the Australian government in 2008. In 2014, David Claudie from the Chuulangun Aboriginal Corporation (representing Northern Kaanju community members) engaged Dr Michael Morrison seeking archaeological consultancy for recording and investigation into several rock art and scarred tree sites in Kuuku I'yu Ngaachi. These sites had been identified by Chuulangun rangers, and their protection and recording formed part of the Chuulangun Cultural Heritage Management Plan (Chuulangun Aboriginal Corporation 2011). The Kuuku I'yu Rock Art Project (KIRAP) was initiated and fully funded by the Chuulangun Aboriginal Corporation. To begin with a survey, photographic recording and report was completed for the corporation (Morrison 2015). This project seeks to further that research into the Northern Kaanju rock art.

Despite the abundance of rock art in Australia, studies in the field have not been as numerous as those in other regions of the world (Franklin 2004:22; Morwood 1984), and the central highlands of the Cape York Peninsula, in which recently rediscovered Kuuku I'yu rock art exists, have not yet been thoroughly researched. Although there is general sentiment that rock art exists in the region, there are no extant academic studies of rock art of the northern highland country of Cape York Peninsula, leaving a significant gap in the scholarship. This project is a preliminary analysis and seeks to illuminate not only the key characteristics of currently known Kuuku I'yu rock art, but also the cultural and social

context in which it was produced. As this study is preliminary and based on only a few sites it is acknowledged that the dataset may not be representative of the entire region, however the need to establish and study these features in relationship with surrounding traditions remains.

As the initial research project into the rock art of the Northern Kaanju, this thesis endeavours to answer the following overarching question: What are the artistic and representative features of Kuuku I'yu rock art and what is its relationship to wider regional trends in Cape York Peninsula? To answer this question a formal analysis is required and will aim to achieve the following: to characterise elements of rock art in Kuuku I'yu country and local trends; to examine relationships between motif types and distribution and the landscape in which they were placed; to undertake an inter-regional comparison to determine whether or the extent to which Kuuku I'yu rock art has similarities with adjoining regions and finally to establish a relative chronology for rock art in Kuuku I'yu Ngaachi. Analysis of what ethnographic material is available will also be undertaken. The formal analysis will be completely digital, as the datasets are pre-existing from the 2014-2015 survey. Use of high-resolution photography and 3D photogrammetry modelling software (Agisoft PhotoScan) to conduct the analysis allows this project to test the viability and practicality of completely digital projects from the outset as a subsidiary outcome.

The implications of the formal analysis are likely to be generalised insights into behaviour, use patterns and general length of use, and cultural concerns of the Northern Kaanju. It is not the goal of this thesis to attempt to understand specific details about culture and stories that have not been explicitly shared by the Traditional Owners. Where possible these use patterns will be used to determine whether there are 'phases' or periods

in which certain sites were used. While no data has yet been collected for absolute dating, a relative chronology via the construction of Harris Matrices can be very useful for understanding the linear progression of use-patterns and stylistic conventions.

Comparison of the results of the formal analysis will be made to existing data from the south-eastern CYP region (David and Chant 1995) to determine whether a relationship or correlation exists between use patterns and overarching thematic concerns of the Kuuku I'yu rock art and that of previously studied CYP assemblages. Certain regional patterns and inter-regional interactions previously pointed out by David and Cole (1990) were highlighted and analysed in David and Chant's (1995) study, and understanding how Northern Kaanju rock art complements, contradicts or expands that data may help to elucidate the relationship of the Northern Kaanju to the wider CYP cultural landscape.

Although the CYP region is famous for rock art, the Kuuku I'yu people are relatively invisible in the literature, despite having a rock art tradition of their own. This leaves a large gap in the scholarship regarding cultural expression in CYP and although David and Chant (1995) have managed to collate large bodies of data to show regional trends in the south-eastern CYP very well, their data remains incomplete so long as large swathes of the region are unknown from an archaeological perspective.

The ethnographic and historical background of the Kuuku I'yu region will also be examined to contextualise the data that the formal analysis generates. Although ethnographic information directly related to the Kuuku I'yu is rather limited, some information is available via anthropological reports from the 1930's-1970's and heritage reports released by the Chuulangun Aboriginal Corporation more recently. This will be



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paired with a discussion of the geological and climate environment in which the Kuuku I'yu rock art resides.

This project is significant to the Northern Kaanju, as the sites were recently rediscovered. The work of the Chuulangun Aboriginal Corporation is focussed upon caring for country and the community. One of the main ways in which they hope to achieve this is via knowledge and research. This project, being commissioned by the Northern Kaanju community members, allows for this project to make a meaningful contribution towards that goal. Through investigating this rock art knowledge about culture, community and the land may be strengthened, and connection to country and ancestors could be reinforced. In this case, archaeology would be working *for* indigenous people, rather than simply being about them.

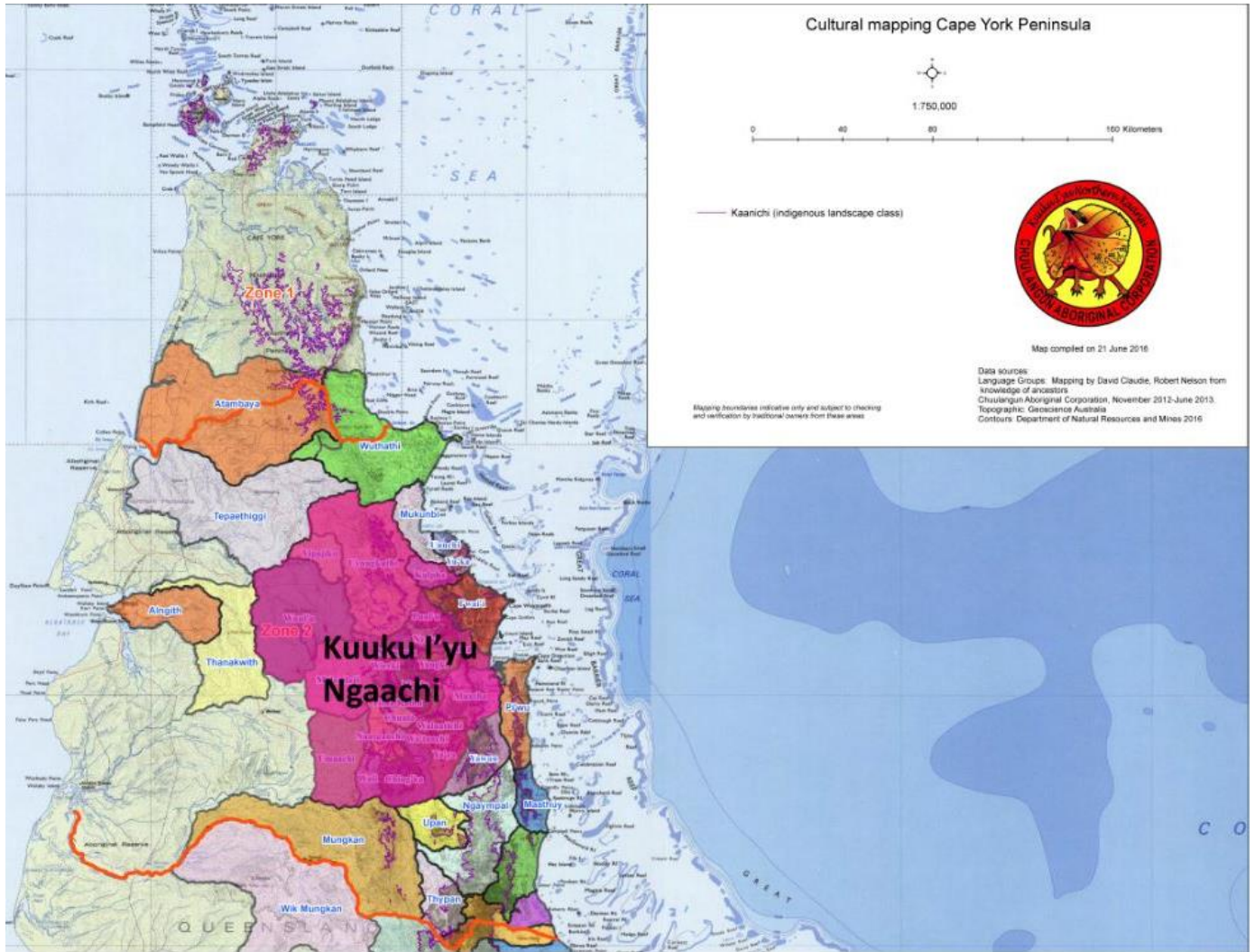


Figure 1 Cape York Peninsula showing the area encapsulated by the Kuuku I'yu Ngaachi (purple). Source: Map provided courtesy of Chuulangun Aboriginal Corporation.

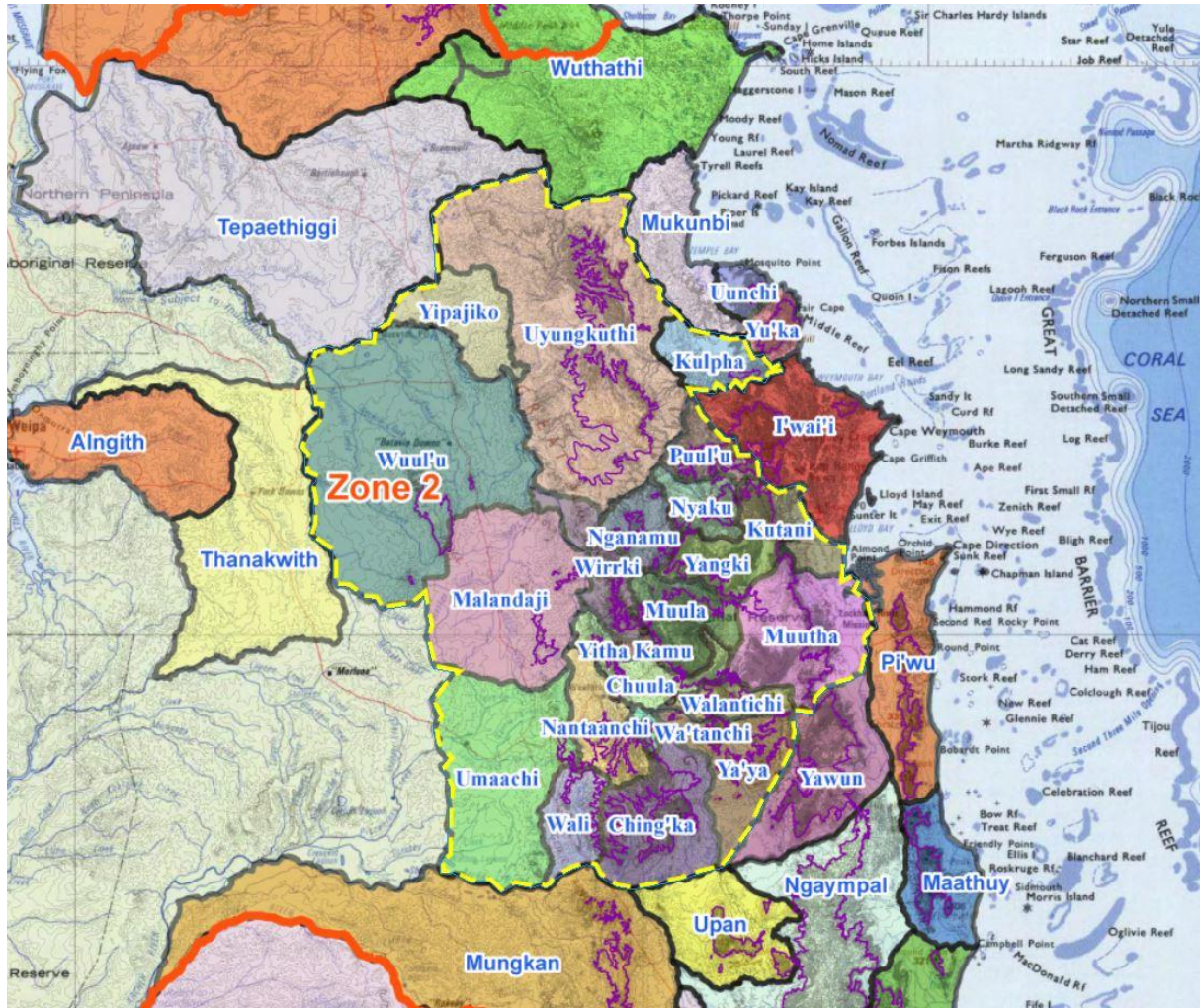


Figure 2 Detail of figure 1 showing the Ngaichi outlined in yellow. Labels are clan estates inside the Ngaichi and surrounding language groups. Source: Map provided courtesy of Chuulangun Aboriginal Corporation.

## CHAPTER TWO: LITERATURE REVIEW

Rock art studies in Australia are uniquely positioned as discussing the archaeological remains of a living culture, people who still have a connection to country and the rock art in which it resides. As such ethnography often informs interpretation and analysis (Cole 2011; Trezise 1969, 1971), however that is not always possible. Therefore researchers have developed multiple approaches to rock art studies over the last few decades that might benefit projects that have minimal ethnographic data, with relative chronologies and multivariate analyses of regional variation becoming popular, especially in Queensland (e.g David and Chant 1995). There is some epistemological contention around such approaches to the study of Australian rock art, especially in regards to interpretation, classification and analysis based upon notions of 'style' (Bednarik 1995, 2006, 2007a, 2007b), however recent standardisation of methodologies (McDonald 2016) have made the discussion of rock art based on statistical observations around 'style' a valid and robust approach. In understanding how these standardised practices came about, this chapter aims to demonstrate the epistemological reasoning for the research design of this project.

### PREVIOUS ETHNOGRAPHIC RESEARCH IN THE CAPE YORK PENINSULA

Some areas of the CYP region have been studied at length by anthropologists, such as the western CYP focussing on the area around the Aurukun, especially regarding the Wik (Sutton 1978), and on customs and ceremony among groups from the eastern coast of the Peninsula at missions such as Lockhart River and Coen (Chase 1980; Laade 1970; Thomson 1933). Further south, David and Wilson discussed the socio-cultural landscape of Djungan country in the south-east of the Peninsula (1999), and Trezise's (1969, 1971) use of

Indigenous knowledge allowed insights into Quinkan art in Laura that may have otherwise eluded him (Cole 2011).

Despite research into coastal groups nearby, and in the case of the groups from Lockhart River and Coen, those directly neighbouring the Northern Kaanju, no exhaustive ethnographic study has been done on the central CYP highlands encapsulating Kuuku I'yu Ngaachi. Much ethnographic material mentions the Kaanju and Kuuku I'yu (Northern Kaanju) in passing (e.g. Thomson 1933). A few sources stand out as discussing the Northern Kaanju directly such as Chase's extensive research on tradition at the Lockhart River Mission (Chase 1980), which while focussed on the eastern coastal groups of the region, did address some beliefs and customs of the highland portion of the population of Lockhart River in the 1970's. That being said, he admitted himself that many of the Kaanju and Northern Kaanju residents at Lockhart River Mission identified more closely with those at Coen, and many had moved there from Lockhart River fearing sorcery and alienation from other clan groups (Chase 1980:213-216). Thus, his population sample was rather limited, although his work was an important step in acknowledging the continuation of culture and tradition throughout and after the traumatic and deadly era of 'Aboriginal Protection' and the formation of missions in the CYP. McConnel also published some material regarding Kaanju customs, totems and the 'hero cult' directly (1931, 1936), and discussed them via their interactions with the Wik-Munkan (1957), however the most informative discussions on the traditions, cultural landscape and world-view of the Northern Kaanju without consistent juxtaposition to their coastal neighbours come from representatives of the community themselves (Claudie 2007; Chuulangun Aboriginal Corporation 2015; Mackey and Claudie 2015).

## THE DEVELOPMENT AND EPISTEMOLOGY OF MODERN ROCK ART STUDIES

Early studies of rock art in Australia were undertaken with a colonialist mindset, with assumptions made regarding what was being depicted and the central meaning behind rock art being made, often without consultation with Traditional Owners of the country in which the art is situated, and the cultural knowledge that relates to it. Not only were these assumptions often erroneous, they were overly simplistic, and did not even begin to cover the depth of layered meaning and cultural content that each motif might contain (Morphy 1999). Macintosh (1952, 1977) famously realised twenty years after his initial work at Beswick Creek that he had misidentified most motifs he worked with, his work being a product of a time of limited ethnographic research and early methods of analysis.

Morphy (1999) has shown that any particular motif in Indigenous art may have many meanings: from the obvious semantic identification of a figure (e.g. macropod), to the dreaming story that may relate to it. It may be a representation of a landscape or dreaming network/track, indicate sexuality and reproduction or any other plethora of potential meanings that are only explicated to initiates of a certain social and cultural position within the Indigenous community. Understanding and respect for the cultural context and relevant ethnographic information is key to meaningful interpretations of rock art, and yet this was ignored in early research. At times the results of that ignorance have been harmful to Indigenous people, eroding their culture, maintaining colonial prejudices and demeaning Indigenous heritage (Smith and Jackson 2006). Collaborative rock art studies that have sought consultation with relevant Indigenous groups have yielded some excellent results in presenting a balanced and informed discussion of potential meanings, significance of rock

art and its ongoing cultural relevance, whilst respecting Indigenous rights to manage their own cultural knowledge (e.g. Brady and Bradley 2014).

Despite the importance of ethnographic studies, the following ethical element cannot be underestimated in rock art research. Non-Indigenous researchers, although ethically obligated to seek consultation with the Traditional Owners of both land and cultural knowledge, are in no way entitled to any information that may be known.

Langford's statement (1983) that '...you have come as invaders, you have tried to destroy our culture, you have built your fortunes upon the lands and bodies of our people and now, having said sorry, want a share in picking out the bones of what you regard as a dead past. We say that it is our past, our culture and heritage, and forms part of our present life. As such *it is ours to control and it is ours to share on our terms*' (emphasis added) encapsulates the need for decolonisation of archaeology in general, and the ethical position from which researchers must conduct themselves.

Rock art researchers are yet to agree on how this can be adhered to long-term, and occasionally there are approaches that are somewhat paralysed between respect for Indigenous cultural agency on the one hand, and epistemology on the other. For example, Bednarik (2007b:241-243) states that interpretations of 'climbing men' in the Dampier Archipelago is erroneous, but that he cannot divulge the true nature of the motif (an appropriate demonstration of discretion). Where he becomes somewhat paralysed is in his assertion that statistical analysis based upon taxonomies of an etic motif identification is unscientific and therefore of no use to the discipline. Bednarik's position is firmly entrenched in the notion that unless one hundred percent of the cultural information regarding rock art is known, there is no use in analysing it formally in any way. Such an

extreme view seems rather obstructive, especially when compared to Brady and Bradley's (2014) rather successful collaboration with Indigenous communities to mutual benefit.

More scientific methods have been applied to rock art studies in recent years and have provided some contextual basis for analysis. Modern dating techniques have shown that rock art production appears to have developed independently in Australia at least 30,000 years ago, with radiocarbon date results in the area of the CYP of  $29,700 \pm 500$  BP at Chillagoe ( $28100 \pm 400$  for paint) (Campbell and Mardaga-Campbell 1993) and  $24600 \pm 220$  years BP for pigment at Laura (Watchman 1993). Although absolute direct dating of rock art is notoriously difficult and prone to distortion through multiple factors (Bednarik 2007a:115-116, 139-143), there has been some success in using various techniques such as oxalate crust analysis (Cole and Watchman 2005), lichenometry, luminescence (OSL) and colorimetry (Bednarik 2007a:124-139, 2009), also referred to as 'contrast state' (McDonald 2016; Mulvaney 2015). Most of the pigment art in the CYP region likely post-dates around 10,000 BP, especially in cases in which the motif is visible to the naked eye (Cole and Watchman 2005; Franklin 2004:9-13, Table 1:1). The earliest dated pigments are not part of recognisable motifs, being instead in contexts that suggest pigment applied to rock like that at Carpenter's Gap (O'Connor and Fankhauser 2001), with artistic intent being a matter of interpretation.

As most identifiable pigment art is far younger than many petroglyph examples, there is a separation in the literature between studies of petroglyphs and pigmented rock art in Australia. Although pigment (ochre) was used in the Pleistocene in burials at Lake Mungo (Bowler et al. 1970:52), and was found in a likely rock art-related context at Carpenter's Gap dated to  $42,800 \pm 800$  BP (O'Connor and Fankhauser 2001), taphonomic



processes have destroyed most pigment art that is older than a few thousand years.

Discussions of petroglyphs are largely focused upon the Pleistocene, or a continuation/evolution of Pleistocene traditions (e.g. Balme et al. 2009; Maynard 1976; McDonald 2017; McDonald and Veth 2009, 2010; Mulvaney 2013) whilst discussions of pigment art are mostly constrained to the Holocene (e.g. David and Chant 1995; David and Cole 1990; David and Lourandos 1999; McDonald and Veth 2008; McNiven et al. 2004; Rosenfeld 1982). It must be acknowledged however, that in the Holocene pigment and petroglyph art were used in tandem and as different mediums within singular traditions (McDonald 1991:78). It should be kept in mind that the same may very well be true for the Pleistocene traditions, and that they may have served disparate functions within a cohesive tradition.

Initial studies on variation in rock art were concerned with elucidating the development of traditions in a somewhat relative chronology (Chaloupka 1984; Maynard 1976). Maynard's thesis (1976) that a homogenous tradition existed across Sahul- nicknamed Panaramitee after a site in South Australia which typified this style- was particularly influential. According to Maynard, three distinct 'styles' of motif can be identified in Australian rock art: Panaramitee, simple figurative and complex figurative (1979:91-101). Panaramitee is typified by tracks, circles, mazes, linear designs and crescents. Using Edwards' arguments for age (Edwards 1971; in Maynard 1979:92-95), Maynard places Panaramitee as part of deep antiquity, the earliest known examples of art in Australia. Further, although some regional variation in scale or motif type is acknowledged, Maynard identifies this style as essentially pan-continental and indicative of a relatively homogenous cultural group (1979:95). Following this 'Panaramitee' tradition are the simple figurative, identified by 'crude' figurative shapes of zoomorphs and anthropomorphs, and finally the

more 'sophisticated' complex or animated figures of X-Ray, *Gwion Gwion* (identified as Bradshaw) and *Wandjina* traditions (1979:99-101). Despite grouping vastly different examples of simple or complex figurative styles together (such as Quinkan in Laura and Sydney Basin rock art), Maynard suggests that cultural homogeneity has ceased at this stage, proposing rather that they are examples of general development of artistic styles that should be 'viewed from a step back' for their general features (i.e. crudeness or sophistication) (1979:99-100).

Following publication of many more sites since Maynard's analysis, the model proposed is now seen as untenable for several reasons. A key criticism was the fact that petroglyphs continued to be used until the recent past: a fact that is not properly addressed in the initial schema (Rosenfeld 1991:140), and it is likely that pigment art accompanied petroglyphs even in the Pleistocene. From an epistemological standpoint, there is an element of evolutionary presumption behind Maynard's model. The 'crude' to 'sophisticated' development belies earlier conceptions of rock art as evidence of pre-Darwinian views of evolution as progress identified by Layton, although he does not explicitly put Maynard's work in this category (1991:25) yet Rosenfeld is much more willing to state that the work is evolutionary in nature (1991:136).

A better model has unfortunately not been forthcoming as "increasingly complex patterning, which continues to be identified across the continent has stymied the development of a better model – and this seems likely to be because the diachronic pattern present across the continent is not unidirectional; but more episodic and mosaic-like in its patterning" (McDonald and Veth 2010:3). Subsequent studies have shown that regionalisation was far more apparent and far more complex than Maynard had realised,

even within the Panaramitee tradition (Franklin 2004; Mulvaney 2013). The 'homogeneity' identified by Maynard has been interpreted as demonstrating that the production of petroglyph markings was part of the toolkit used by the colonisers of Sahul, looking to communicate non-verbally over large distances with small groups as they ventured further into the new continent (Balme et al. 2009; Brumm and Moore 2005; Franklin 2007; McDonald and Veth 2010; Smith 1992). The communication systems of these colonising groups became regionally varied very quickly. This regional variability that developed over the course of colonisation can be seen as symbolic behaviour (Balme et al. 2009; Brumm and Moore 2005) that may reveal information about social dynamics such as identity marking (McDonald 2005; Wiessner 1989), trade in valuable goods such as ochre, shell and stone tools (McDonald and Veth 2010), territoriality (Smith 1992), social interactions between groups (Balme et al. 2009) and potentially the routes taken in colonisation (Balme et al. 2009). This should not be confused with the suggestion by Morwood (1988) (based on the notion of homogeneity in early Panaramitee) that Maynard's model demonstrates a move from closed to open networks (Franklin 1991). Franklin (2007) has made some enticing suggestions regarding the development of dreamtime networks that are likely reflected in the symbolic choices made in rock art production and by extension the nature of social interactions in the Pleistocene.

## REGIONAL VARIABILITY STUDIES

Studies of variability may have a localised focus, or they may be regional in their purview. Morwood's (1979) early work on local variation in Queensland made the connection between changes in rock art and changes within the larger archaeological record (i.e. environmental change, technological changes, ethnographic information) in a similar

method to analysis of stone tools, an approach that would later influence the work of other researchers in Queensland (David and Chant 1995:362). Morwood contextualised changes in rock art in a way that Maynard was not able to do with the resources she had (Franklin 2004:8) and was part of the change in archaeological discourse from being largely evolutionary to considering social complexities as factors in change (David and Chant 1995:362-363). He also advocated for a multidisciplinary approach to rock art studies. (Morwood 2002:265-267).

As opposed to pigment art, variation within petroglyphs has also been studied in a more local sense. Mulvaney (2011, 2015) was able to show that over time, rock art producers at Murujuga altered their practices from depicting mostly terrestrial animals, archaic faces and what might be called 'Panaramitee' linear designs to heavily featuring marine animals. His main thesis suggests that this variation likely coincides with sea level changes and marine transgression after the Last Glacial Maximum, as the Dampier Ranges became an archipelago (see also McDonald 2015). Extensive surveys and recording of more than 1 million motifs allowed the production of a 5-phase sequence of the continuous occupation of the Dampier region based upon changes in dominant relief subject matter and 'styles.' Mulvaney's connection between local variation and climatic data is an example of the more scientific approach to contextualising variability studies seen in recent years despite Bednarik's assertions that stylistic analysis is unscientific (Bednarik 2007b).

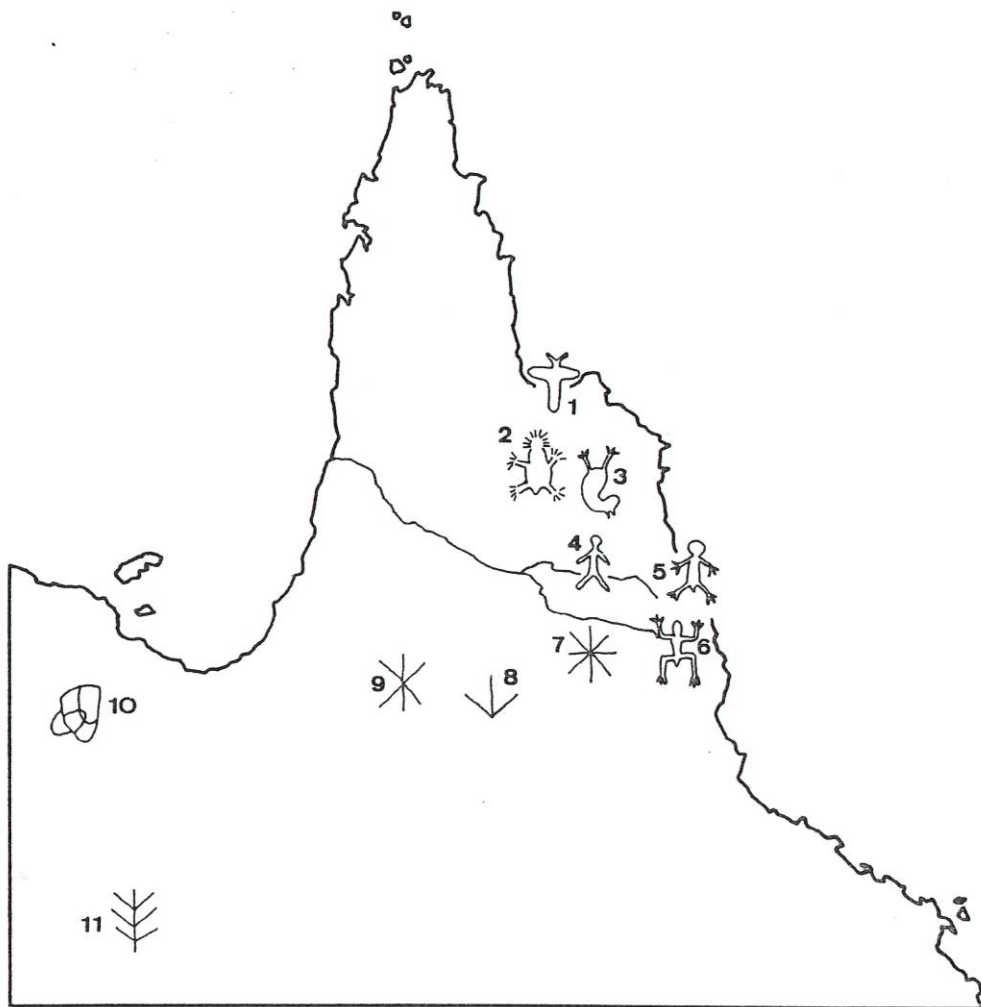


FIG. 113. Summary of geographical sets based on predominant painting forms. 1, Princess Charlotte Bay & the Flinders Is. Group; 2, Koolburra Plateau; 3, Laura (Jowalbinna, Jackass, Laura R.); 4, Mitchell-Palmer; 5, Bonny Glen & Mt Windsor/Mt Carbine; 6, Bare Hill; 7, Rookwood, Mungana, Chillagoe, Ngarrabullgan & Ootan; 8, Georgetown (from slides held at the Cultural Heritage Division, DEH); 9, Croydon (from slides held at the Cultural Heritage Division, DEH); 10, Lawn Hill; 11, Mt Isa.

Figure 3 David and Chant's regional variability study areas showing the predominant painting forms at 11 sites in the SE Cape York Peninsula. Source: David and Chant (1995:502, Figure 113).

In the CYP (Figure 3), several distinct traditions have become apparent in the south-east (David and Chant 1995; David and Cole 1990). Analysis of motif distribution demonstrated that in the areas north of the Mitchell and Walsh rivers (Laura, Koolburra Plateau, Princess Charlotte Bay and Bonney Glen), figurative motifs are more common, and to the south (Chillagoe, Rookwood and Ngarrabullgan), non-figurative or abstract motifs dominate (David and Cole 1990; David and Lourandos 1998). Within these larger groupings, smaller localised traditions with dominant motifs such as therianthropes in the Koolburra

Plateau (Flood 1987), moths and dotted outlines in Princess Charlotte Bay and the Flinders Island Group (Walsh 1988 in David and Cole 1990), and Quinkan figures in Laura (Trezise 1971) have been used to demonstrate that regional variation functions on more than one level (Cole 2016; David and Cole 1990). Nearby to the CYP, studies have shown similarly identifiable regional traditions exist in the nearby Torres Strait (Brady et al. 2013) and the Gulf of Carpentaria (Brady and Bradley 2014).

Stylistic and thematic variability at both a regional and smaller clan or language group level has been rather successfully interpreted along with archaeological materials as the result of, and as part of demographic changes and socio-cultural processes. Following Morwood's (1979) multidisciplinary approach to the central Queensland highlands, the publication of Lourandos' intensification model (1983), citing increased site usage and deposition rates in the late Holocene as an indicator of demographic and social changes, which can be seen in the CYP region (Beaton 1983, 1985; David and Lourandos 1998, 1999), encouraged more rigorous and nuanced discussions of what the data in the south-east CYP indicated about social interactions (David and Chant 1995:362-363).

More recently, the concept of the 'cultural landscape' and broader big-picture analyses have shown that the study of any kind of socio-cultural change must take a broad approach (McNiven et al. 2006). In contextualising rock art in its cultural landscape and then applying statistical analysis it was hoped that "we may begin to get an idea of the structural dynamics of Aboriginal societies and cultures over the long-term-that is, how territorial networks, language groups, 'tribal ' areas, exchange systems, interacting spheres and the like may have changed through time and across space. We can begin to investigate the way

people organised themselves on the ground, and how this changed through time” (David 1998:144).

Seeing the rock art as part of a cultural landscape, and understanding that it is a political and a territorial identity statement (Wiessner 1989), which gives identity to both the landscape and the people who belong to it, as well as a spiritual and potent connection to dreaming ancestors (David and Lourandos 1998:195-196) allowed the archaeological elements of regionalisation and intensification to come together to interpret the social structures of Cape York before colonisation in the following manner: as a resource-rich, low-risk environment, social relationships that were once open to encourage needed co-operation prior to climatic amelioration became increasingly closed, with sharing of territory diminishing (Yengoyan 1976) and relationships or interactions becoming formalised. Accompanying this was potentially increasing populations in resource-rich areas that would fission when their groups became too large (Birdsell 1953). Rock art researchers have used this model to demonstrate that the variation in rock art styles reflects the emergence of groups that although culturally similar, have distinct modes of representation, and varying spiritual and cultural concerns (Cole 2016; David and Cole 1990; David and Lourandos 1998; Rosenfeld 1982). Thus, the culturally distinct ‘closed’ group north of the Mitchell and Walsh rivers with figurative art styles of various subject matter and intense interaction but obvious regional cultural differences interacted with their neighbours very differently to those from the south, who used mostly non-figurative motifs and would travel large distances for trade and cultural interaction with other associated clans (David and Cole 1990; David and Lourandos 1998).

## MULTIVARIATE CORRESPONDENCE ANALYSIS FOR REGIONAL VARIABILITY

A major development that allowed the more intensive analysis of large amounts of data that made regional variation studies in the CYP possible was the ready availability of computers for multivariate analyses. A move away from focussing on chronologies to understanding *spatial* variation in favour of the to-date problematic *temporal* variation also allowed more meaningful analysis to occur. Maynard's 1976 study did not have the data, nor the ability to process the amount of data that was available to David and Chant in 1995. Using their basic methodology, Franklin's (2004) later analysis of petroglyphs gave much clearer indications of degrees of variability, geographical groupings and clustering that were not immediately obvious to Maynard. Since then, the methodology of stylistic multivariate analysis (multiple correspondence analysis) has been refined through experimentation and technological advancement (McDonald 2016) and it is clear that standardisation of classificatory schemes form a major basis of consistent analysis (Brady et al. 2013). ArcGIS, handheld devices, and programs such as Microsoft Access and IBM SPSS that have allowed for more rigorous analysis and for consistent, replicable results from easily accessible (and shareable) datasets (McDonald 2016) have all contributed to creating quantifiable data from rock art assemblages that might be approached in a scientific (or mathematical) manner. Although still very much depending upon the interpretation (and established taxonomies) of the archaeologist, this method allows for exploration of style as a combination of variables (McDonald 2016:924).

This methodology is not without criticism, however, as although the analysis of the data is systematic, the initial classificatory schemas upon which analyses are based are ultimately established by the archaeologist as an 'etic' or alien observer (Bednarik 2007b).



and may be unrelated within a classificatory framework, with interpretations that are incorrect (e.g. Macintosh 1952). In fact, researchers have been working on taxonomies that are less interpretive in their identification for some time. Clegg (1977) introduced a '!' before any identification – i.e. !macropod- to clearly show that the identification was *etic* and not indicative of true meaning or intended form. Alternatively description of objects as blobs or shapes such as longs or rounds, moving clockwise around the motif (Clegg 1981) avoided issues of *etic* interpretations being imposed upon material, but it was difficult to use and interpret (Franklin 2004:28). More recent studies have continued to use established typologies set out by previous researchers, with an explanation of the *etic* nature of the identification being made explicitly clear (Franklin 2004; McDonald 1991; Rosenfeld 1982) and a rather transparent treatment of inconclusively identified motifs (Layton 1991:30-33).

Acknowledgement of the *etic* and *emic* approaches to art in general has been discussed at length in archaeology (e.g. Melas 1989; Tilley 1989), and although the 'problem' is somewhat philosophically insurmountable, the analysis of art has not been stagnant, with work continuing instead in the direction of using what is available to the *etic* observer as effectively as possible. In his criticisms, arguing for 'hard science' as the only method of rock art research, Bednarik (1994, 1995, 2006, 2007a, 2007b, 2009, 2014) does not properly address the difference between interpretation of what motifs might depict, and whether the observer correctly interprets them, and an analysis of *style*. One does not necessarily have to know what is meant to identify the basic form that is shown. Style is simply a way of doing something (Hodder 1990), or in more detail, it "is a form on non-verbal communication through doing something in a certain way that communicates information about relative identity" (Wiessner 1990:107). This identity may be group identity (conforming to a recognisable way of marking rock or a tradition) or individual

identity (breaking from tradition with innovative choices). Either way, style is a way in which that identity may be expressed and negotiated (Wiessner 1989, 1990), and ultimately occurs when group identity and co-operation is needed (leading to homogeneity), or when competition between individuals for economic or political gain occurs, or as a result of social breakdown (leading to heterogeneity) respectively (McDonald 2005; Wiessner 1989). It is this dynamic that stylistic analyses in Australian rock art are often measuring, and the intended meaning behind the rock art is not the focus.

The relationship of previous research to the Kaanju rock art of Kuuku I'yu Ngaachi is relatively straightforward. At this time, almost no research has been undertaken on CYP rock art north of Princess Charlotte Bay. Kuuku I'yu country is relatively close to well-researched rock art assemblages in the CYP and thus it stands to reason that a formal analysis of Kaanju rock art paired with a comparison with nearby regions should give some indication of the cultural landscape within Kuuku I'yu Ngaachi and perhaps how it relates to cultural networks across the CYP region.

## CHAPTER THREE: THE STUDY AREA

### ETHNOGRAPHY AND HISTORY

The Kuuku I'yu people, like the rest of the Indigenous population of CYP, have a recent history of disruption, displacement, dispossession and a significant loss of life in the era of post European and Asian contact in the region. Although the CYP was one of the last places in Australia to be 'colonised,' early explorations from Europeans from the 1840's had violent outcomes for both explorers and Indigenous populations (Chase 1980:97; Morrison et al. 2018). Lugging, trepang and pearl diving industries grew steadily from the 1870's, employing Indigenous people in large numbers (Chase 1980:97-100). The discovery of gold in the region brought several small goldrushes in the areas of Coen, the Archer River headwaters and the Wenlock River, bringing influxes of miners and the implementation of telegraph stations that would displace the Kaanju and their neighbours (Chase 1980:101-102; Morrison et al. 2018) and eventually force Roth to suggest their removal to isolated camps for their 'protection' (Roth 1900:9).

Roth's suggestions were in response to an extended period of frontier violence during which the Indigenous population of the CYP were systematically removed from their country via either forceful removal in chains, coercion or mass murder to facilitate the expropriation of their land by white settlers (Bottoms 2013: 114-132; Morrison et al. 2018). These atrocities were committed by station and land 'owners' and the government authorised and deployed Native Mounted Police as retaliation for slights such as the theft and spearing of cattle, theft of telegraph wire, spearing of horses and occasional violent interactions with settlers (Bottoms 2013; Chase 1980; Morrison et al. 2018:103; Richards 2008). These extreme measures were taken not out of a sense of justice for lost cattle or

goods, nor out of some misguided attempt at 'protection' for the 'poor wretches' as they were so often called. Rather, this was a systematic and calculated removal of rightful owners of land for the purpose of colonial 'settlement' and resource exploitation with a complete lack of regard for the value of Indigenous life and culture. This was followed by a long history of persistent and deliberate governmental and institutional abuse of Indigenous people in Queensland to keep them in a powerless position (Kidd 1995).

The movement of people onto missions occurred over the span of thirty years, with the *Aboriginal Protection and Restriction of the Sale of Opium Acts Amendment* (1934) giving the Queensland government the final broad-sweeping powers to declare Indigenous people protected and legally move them onto missions, where their traditional culture and life-ways were discouraged (Chase 1980:114). From 1936, few Indigenous people still lived on country, until the outbreak of WWII, in which some Indigenous groups were briefly allowed to move further inland onto traditional lands. These groups were then brought back and under more strict religious control, known at Lockhart River as 'Rowan-time" and "Warby-time" after the two superintendents who would impose much more strict Christian lifestyles on the missions (Chase 1980:119).

Despite the loss of culture, country and life, the Kuuku I'yu traditions and culture have indeed continued into the present, and their identity pre and post European contact are based on their family and ties to their country. The Kaanju exist within the larger cultural landscape of *Payamu*, which is made up of approximately 30 clan estate groups. Within the Kaanju is a south/north split, with the Southern Kaanju often just called Kaanju and the Northern often called Kuuku I'yu. Although they are linguistically very similar and consider themselves as the same basic language group (Chase 1980:216), there is a distinction that is

sometimes expressed as ‘talking this way’ as opposed to ‘talking that way’ (Thomson 1933:458). The Kuuku I’yu are an inland people and identify themselves by their Ngaachi occupying the highlands along the McIlwraith Ranges. Again, identification by country can be seen in linguistics with interactions with their Eastern coastal neighbours having such delineations as *pama kanityi* – “up on top people” as opposed to *pama pakaytyi* – “down below people.” Further examples of this divide include the terms *ngaatyti kuuku-paalanamu* – “talk belonging to the behind place” and *ngaatyti kuuku-malngkanamu* – “talk belonging to the sand beach” (Chase 1980:143-144). In the 1970’s Chase observed that ‘boxing up’ would occur at the Lockhart River Mission, in which Northern Kaanju would associate with northern coastal groups, and their Southern Kaanju neighbours would do likewise, indicating that the inside/outside, north/south relationship is somewhat complex (1980:216-217, 247).

The social arrangement of the Northern Kaanju is closely associated with connection to country, with a person’s identity and position within the social milieu of Payamu being defined by their patrilineal heritage. It is through the father’s bloodlines that a person belongs to one of the clan estates within Kuuku I’yu Ngaachi, the resources, language and species whose stories reside within those clan estates such as the frill-neck lizard belonging to Chuulangun (Claudie 2007:93-94). This division and relationship with the land forms part of the Kaanju system of governance within traditional law that also dictates the responsibilities of the Kaanju in relation to land and cultural management, as well as their rights and obligations (Claudie 2007:92). These responsibilities include passing on knowledge to young people when they are deemed to be ready in many aspects of traditional life (Chase 1980:257).

Whilst connection to country and clan estates are dependent upon patrilineal heritage, the assignation of a moiety to each person is based upon that of their mother (Thomson 1933:519). The two moieties that are in opposition to one another are assigned to humans, animals, places, plants and other elements of the Kaanju cosmos and dictate rules of everyday life such as marriage, social relationships, safe access to certain areas, animals that may be off-limits for certain people to eat, and personal totems (Chase 1980:141, 160; Thomson 1933:519); Thomson even observed soccer games at the Lockhart River station that were divided into teams based on moiety (1933:460).

Totemism is linked both to moiety in the keeping of personal totems such as the crocodile, and to patrilineal heritage via the main totem(s) associated with a person's familial clan estate, although it is clear that each clan estate may have many totems and associated stories/animals (Claudie 2007:93; McConnel 1931; Thomson 1933:499-500, 519). It is also clear that the Kaanju do not consider themselves actually descended from these totems as some kind of mythical origin story, but rather from a single human ancestor for each clan group (Thomson 1933:499).

Sorcery is another spiritual element of Northern Kaanju life that was prominent across Indigenous cultural groups, including those in the Cape York Peninsula (McNiven and Russell 2002:19; Trezise 1971). Indeed fear of sorcery was observed by Chase at the Lockhart River Mission in the 1970's (Chase 1980:213-216) by the Kaanju who believed that individuals from the coastal mobs were responsible for the death of Kaanju people through curses and ritual magic, with a few key perpetrators thought to be engaging repeatedly in these actions. Some curses could be removed, but accusations of sorcery were common and taken extremely seriously.

Food and resource exploitation is fundamental to daily Kaanju interactions with their Ngaachi, and the appropriate knowledge for that to take place for future sustainability is a key part of traditional and modern life-ways for the Kaanju (Chase 1980:257; Claudie 2007; Mackey and Claudie 2015). Land is often referred to by the resources available in a particular place and those resources often 'give' their names to specific locations, perhaps even influencing the placement of camps and other sites (Chase 1980:153). Historically, the Kaanju were at the mercy of seasonal availabilities during the wet and dry season (Figure 4), and Keen (2004:55-59) notes that the varying ecosystems within the Ngaachi provide somewhat diverse resources throughout the seasonal shifts, with vegetables, bark for implements, grass for baskets and wood for spears available in the hinterland forests, swamps, rivers and areas of grassland. Mountain yams found in the rainforest (along with other rainforest fruits) were the most reliable and highly regarded terrestrial food, producing tubers from March until November (Chase 1980:154-155; Keen 2004:55). Wild honey and macropods may be found in open forest, while wallabies and other small animals including smaller birds were available in grass-plains. Larger birds such as emus were wider ranging and inhabited various areas.

The vine forest areas were targeted for fruits during the dry seasons, especially the *Manilkara kauki* wongai plum, and bird species such as cassowary, brush turkey and jungle fowl were used for both meat and eggs along with other small animal species. Lastly freshwater swamps, lagoons and waterways contained freshwater tortoises, aquatic plants, waterfowl, fish and eels. Freshwater food resources were often highly seasonal in comparison to marine resources of the coastal neighbours of the Kaanju, while terrestrial foodstuffs including fauna were more accessible for longer portions of the year (Keen 2004:57).

Availability	Plentiful				Available				Occasionally Available			
	Wet	Wet	Dry	Dry	Dry	Dry	Wet	Wet	Wet	Wet	Wet	Wet
Season	Wet				Dry				Wet			
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Yams												
Wild Arrowroot and other tubers												
Nonda Plum												
Manilkara Plum												
Other Coastal Fruits												
Mangrove Fruits												
Shellfish												
Ray												
Threadfin Salmon												
Mullet												
Freshwater Fish, Eels, Tortoises												
Rainforest Products												
Fish, Shellfish, Crustacea												
Macropod												
Cuscus												
Small Mammals												
Dugong												
Cassowary												
Megapodes												
Torres Strait Pigeon												
Land Reptiles												
Marine Turtles												
Megapode Eggs												
Turtle Eggs												
Wild Honey												

Figure 4 Seasonal availability of resources in the Cape York Peninsula. Data adapted from: Keen (2004:58-59; table 2.9).

Access to coastal resources such as marine turtle or dugong would have been a matter of negotiation via trade with coastal communities (Chase 1980:153-156; Chase and



Sutton 1981), based upon moiety, boxing-up conventions and perhaps matrilineal associations (Keen 2004:360). Certain conventions of taboo surrounding dugong meat and other marine resources such as its unavailability to uninitiated children would have potentially also impacted the availability of these resources to the Kaanju (Keen 2004:345-346). Knowledge of traditional medicines also forms a large part of this community knowledge and the maintenance of a stable environment or 'caring for country' in balance with resource exploitation is at the heart of Kaanju land stewardship practices (Mackey and Claudie 2015).

Despite the upheaval of the forceful diaspora of people from traditional lands and concerted efforts to eradicate traditional life-ways through mission life and dispossession, the Kaanju have reclaimed much of their homelands in the Indigenous Protected Area that Kuuku I'yu Ngaachi reside within. The formation of the Chuulangun Aboriginal Corporation has allowed the Kaanju, especially three key families, to engage with government bodies and the public to begin rehabilitation of not only the country, but also the culture of the Northern Kaanju people. It is through these efforts that new cultural material has been made available for study in this project, and indeed the KIRAP was initiated by the Chuulangun Aboriginal Corporation. It is through these actions that Northern Kaanju people can reclaim their heritage and lifeways and ensure that their traditional lands are cared for and respected into the future (Claudie 2007; Chuulangun Aboriginal Corporation 2011; Mackey and Claudie 2015; Smith 2005).

## PALAEOENVIRONMENT

The approximate 840,000 hectares that encompass the Kuuku I'yu Ngaachi (Figures 1-2) was declared an Indigenous Protected Area in 2008, stretching from the Wenlock River in the south to the Pascoe river in the north and from the Lockhart River valley in the east up to (and including) the Embley Range in the west (Claudie 2007). The largest geological formation within the Ngaachi is the Cape York Peninsula Batholith, an igneous formation largely made up of quartz monzonite that extends to the east coast in some areas. This forms part of the Sir William Thomson Range, which extends roughly north-south and makes up the 'highlands' (generally between 200-350m elevation) by which the Kuuku I'yu largely define themselves. Another part of the Sir William Thomson Range is made up by the Sefton Metamorphics, which run to the east of much of the Batholith. This formation is made up of various rock types such as quartzite, greenstone, schists and phyllite. Thirdly the Gilbert River Formation, sandstone hills and low ranges near to the Wenlock River in the west complete the Sir William Thomson Range and is made up largely of clayey quartzose sandstone with pebble and granular conglomerate deposits. These three main formations are interspersed with sand plains, rolling hills and bauxite oases (Leblanc et al. 2015) and all are intersected by various alluvium, river and creek flats. The main river systems in the Indigenous Protected Area are the Pascoe River in the north, the Wenlock River in the south, the Lockhart River in the east and finally the Archer River running west through the centre of the region (Figure 5).

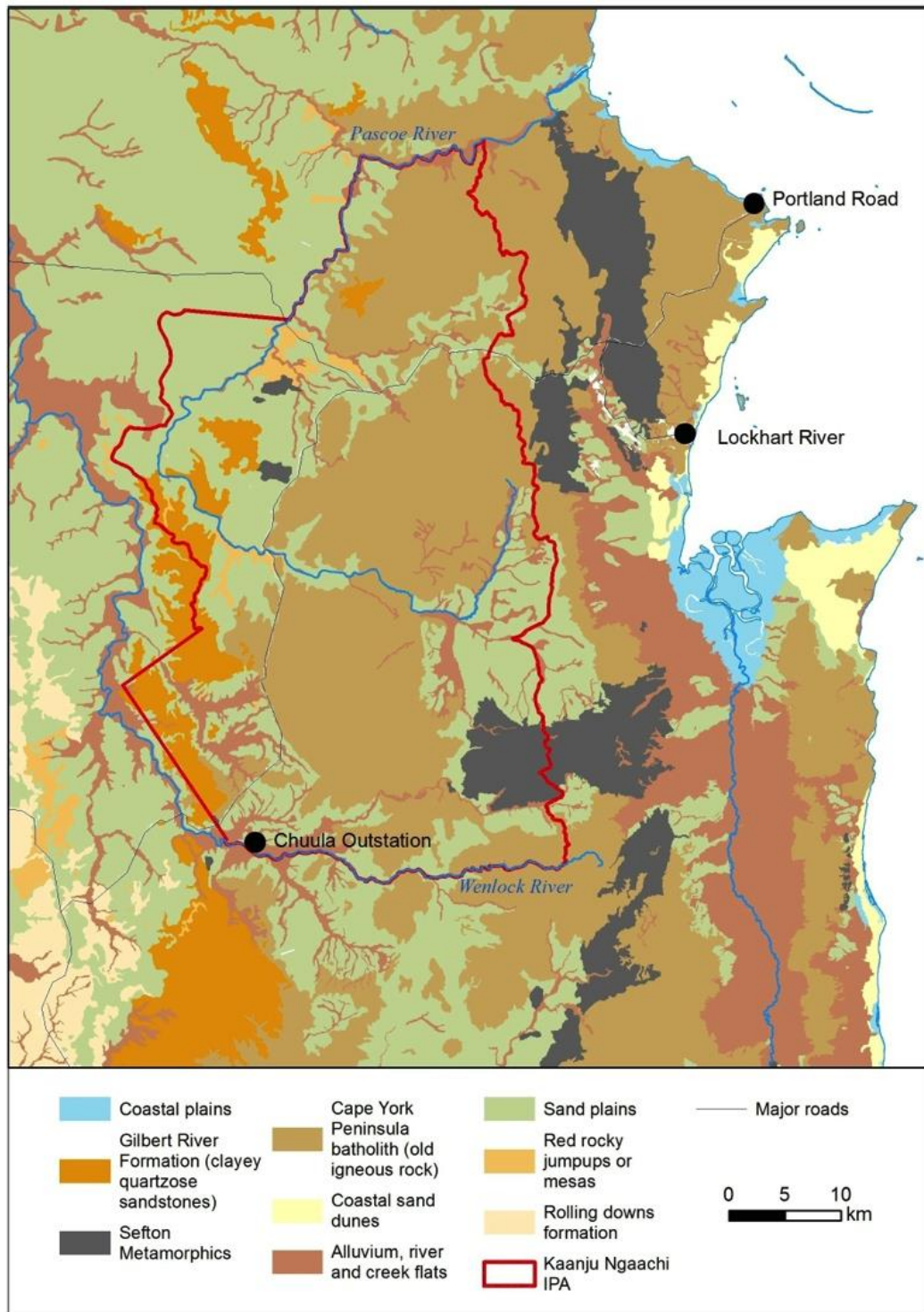


Figure 5 Map of the Kuuku I'yu Ngaachi with major geological formations marked.  
Source: Morrison (2015:Figure 3).

The Indigenous Protected Area around Kuuku I'yu Ngaachi includes diverse, extensive and intact ecosystems. These include eucalypt and paperbark savanna woodlands, lagoon systems, mountain rainforests, deciduous vine thickets and riparian gallery rainforests (Keen 2004:55; Kennedy et al. 2010:5; Mackey and Claudie 2015). Much of the

region supports dry Eucalypt-dominated woodland, especially in the higher elevations and the rolling sand plains. Areas that are lower-lying and subject to more regular inundation feature *Melaleuca* spp. woodlands, whilst creek and river terraces with more access to water again support small patches of rainforest and notophyll or mesophyll vine forests (Keen 2004:55; Leblanc et al. 2015; Morrison 2015:20-22). Accordingly, such diverse environments support a varied array of fauna. Recent surveys have identified 263 native species, including 46 species of mammals, 140 species of birds, 25 species of amphibians and 52 species of reptiles (Kennedy et al. 2010:1).

## CURRENT REGIONAL CLIMATE

Cape York Peninsula is Australia's largest peninsula and forms the north-easternmost point of the land mass of Australia. Modern-day CYP is subject to a tropical wet/dry season climate with seasonal monsoons during summer (December to March). During the winter drought, rainfall is slightly higher in the eastern coastal region of the Peninsula.

Temperatures are high year-round: in the Lockhart River area they are highest (mean maximum 30°C - 32°C) in the wet season and lowest (mean minimum 19°C) in the winter/dry season (Luly et al. 2006:1086-1087). In the terminal Pleistocene and Holocene period, the CYP region saw wide variation in climate, from the onset of climatic amelioration around 19,000BP. Warmer and wetter conditions are noted after 9,000BP, followed by increased aridity from around 5,000BP. Increased variability largely attributed to steadily increasing El Niño events and disruption of monsoon begins around 4,000BP, with localised aridity becoming more common after 2,000BP (Haberle and David 2004:169; Reeves et al. 2013).

## CLIMATIC HISTORY

Like much of ancient Sahul's coastline, CYP has been drastically altered by sea-level rise after the Last Glacial Maximum c.22,000-19,000BP (Yokoyama et al. 2000:713). The LGM was a period of increased aridity, low temperatures, low sea levels, reduced oceanic circulation and thus reduced trade winds due to high global glaciation (Reeves et al. 2013:100-101). At 22,000BP sea levels were at their lowest, being approximately 120m below present (Yokoyama et al. 2000:715, Figure 2). At this time the CYP region was connected to modern-day Papua New Guinea to the north and the low-lying plain with open woodlands of Carpentaria Basin to the west (Voris 2000; Yokoyama et al. 2001:11). The saltwater Lake Carpentaria formed within this basin during sea-level low stand and was the largest body of inland water (at its largest point being >3m average depth and >100,000km<sup>2</sup>) in the northern regions of Australia until inundation and its incorporation into the marine environment on the coast at around 12,000BP. (Reeves et al. 2013:105; Voris 2000; Yokoyama et al. 2001:12).

The termination of the LGM after 19,000BP was caused by a rapid decrease in ice volume of about 10% over a few hundred years, which triggered climatic amelioration (Yokoyama et al. 2000:713). During the following period temperatures and precipitation rose as deglaciation occurred, leading to rapidly rising sea levels of around 1m per 100 years until their stabilisation to roughly current levels in the early Holocene - between 9,000BP – 7500BP (Reeves et al. 2013:109, Figure 9; Yokoyama et al. 2001). The rising sea levels also caused a reorganisation of tidal flows into areas that had been previously dry land, and between bodies of water that had been previously not connected. It is in this period of sea-level stabilisation that modern-day recognisable currents around the CYP were established

or changed to their current configuration including the Inter-tropical Convergence Zone (ITCZ), the South Pacific Convergence Zone (SPCZ), the South Equatorial Current (SEC) and the Eastern Australian Current (EAC) (Reeves et al. 2013). These currents, along with their associated trade winds bring the monsoon in the summer (November to March) as the ITCZ moves south, and further moisture is brought with humid easterlies from the Coral sea and Equatorial Pacific. A seasonal influx of warm ( $\sim 25^{\circ}\text{C}$ ) saline ( $\sim 35\text{‰}$ ) water with low surface nutrients is brought to the Coral Sea on the coast of CYP via the South Equatorial Current (SEC), assisted by these trade winds travelling west across the equator (Reeves et al. 2013:99).

During the early Holocene the monsoon itself was either very weak or not present (Markgraf et al. 1992). The monsoon did not strengthen until the mid-Holocene (approx. 5,000-4,000BP) during the peak of effective precipitation (EP) or Holocene Climatic Optimum, which had been climbing since the early Holocene and is evidenced by pollen analysis in northern Australia (Kershaw 1983; Reeves et al. 2013:107; Schulmeister and Lees 1995:12) including Three-Mile Lake, 38km north-east of Coen (Luly et al. 2006). It is considered likely that the monsoon then became the driving factor for variability in climate after 4,000BP: unstable conditions can be somewhat explained by varying states of the summer monsoon (Schulmeister and Lees 1995:13). In turn, the likely factor in the changeability of the summer monsoon appears to be the onset of the El-Niño Southern Oscillation (ENSO) dominated climate from around 4,000-3,000BP (Enfield 1989; Reeves et al. 2013:109-110; Schulmeister and Lees 1995). The late Holocene from around 2,000BP is then relatively arid and highly variable, with increased localised aridity and periods of intense high rainfall (Reeves et al. 2013).

El-Niño is measured by the Southern Oscillation Index (SOI), and is part of the Walker Circulation, which has a direct effect on rainfall in tropical Australia (Pittock 1975). The SOI is measured as a pressure difference ratio between Papeete in Tahiti and Darwin, Australia: negative SOI is El Niño, whilst positive is La Niña (Enfield 1989:162; Schulmeister and Lees 1995:14). In terms of tropical Australia, a La Niña period brings strong monsoon years, whilst El Niño brings weak monsoon, lower effective precipitation and thus increased aridity (Schulmeister and Lees 1995). El Niño itself is a reversal of surface currents and trade winds in the tropical Pacific, and it appears as though it was a very rare occurrence prior to 7,000BP, with the modern ENSO pattern developing as late as 3,000BP (Markgraf et al. 1992; Schulmeister and Lees 1995). The onset of regular El-Niño events can be seen to explain the increasing aridity of the late Holocene, and the variability of the monsoon, as El-Niño events reversed the effects of the monsoon bringing La Niña every few years or so.

## GEOLOGY AND ENVIRONMENT OF THE CYP

Cape York Peninsula is a tropical landscape with some variation to the vegetation and several key geological features that support the varied flora. CYP may be roughly divided into the western, central and eastern Peninsula. To the west lies the Weipa plateau and low-lying sand plains, the central Peninsula features the Rolling Downs Formation, which includes Kuuku I'yu Ngaachi. Cainozoic duricrusts generally dominate the western and central Peninsula. The central Peninsula ends abruptly at the broad sandy plains and low ranges of the eastern Peninsula, which features granite and metamorphic mountains adding climatic and biological diversity to that region (Luly et al. 2006:1086). The western and central Cape feature sclerophyllous open forests, whilst the eastern uplands of the McIlwraith and Iron ranges contain tropical rainforests, swamp forest and open forest in

areas of differing soil, topography and microclimate (Luly et al. 2006). Seasonal creeks and gullies cut through much of the east, draining predominantly into the Pascoe and Wenlock rivers. Bauxite Oases in the Wenlock Basin provide support for spring forests- diverse sub-ecosystems that are integral to Indigenous populations who depend on them for resource exploitation (Leblanc et al. 2015).

The most dominant geological feature within Kuuku I'yu Ngaachi is the Sir William Thompson Range, which stands typically at around 200-350m elevation and extends for 30-50km east of the Wenlock river. Once again, this range can be divided into the western, central and eastern range. The western portion of the range is dominated by sandstone hills and low ranges including part of the Gilbert River formation – clayey quartzose sandstone with deposits of granular and pebble conglomerate. It is most narrow in the south and narrows towards the north.

## PROJECT BACKGROUND

The three sites analysed in this thesis were initially surveyed as part of KIRAP by Dr Michael Morrison in 2014. This survey identified other sites of interest such as scarred trees, artefact scatters and mining related historical sites (Morrison 2015). The three sites in this study were initially identified as Chuula 1 (CH-01), Chuula 2 (CH-02) and Ching'Ka 1 (CHK-01). Ching'Ka, however, was later renamed 'Wa'tanchi' (WT-01) after advice from Chuulangun Corporation CEO David Claudie. The names are related to the clan estates that each site exists within, which are smaller area designations within the larger northern Kuuku I'yu Ngaachi Indigenous Protected Area, based upon familial clan associations.

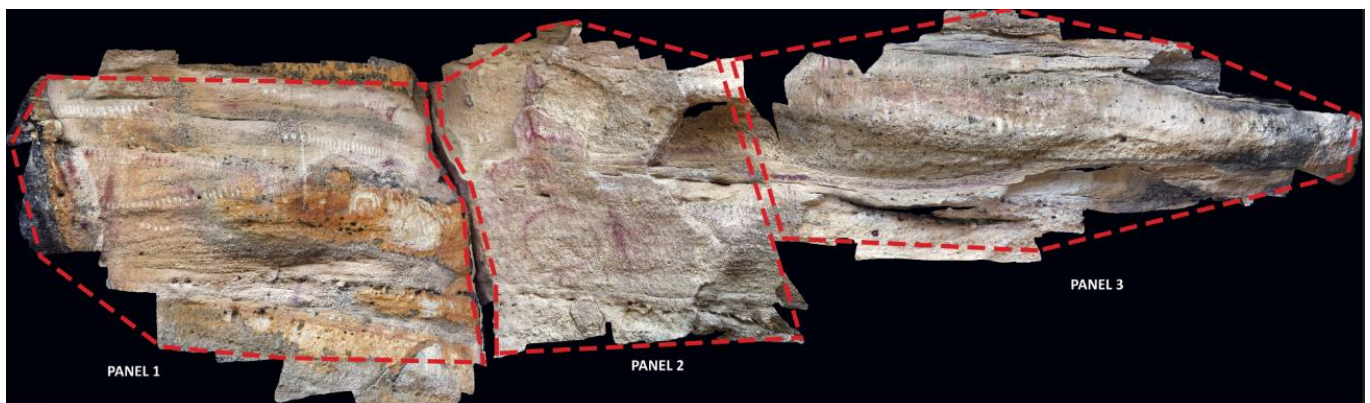
In the initial site survey, the condition and key features of each site was noted along with recommendations for the maintenance of these locations to protect rock art and



potential archaeological materials that may exist within the rock shelters and their surrounds. A subsequent visit to the site has not been possible and thus at this early stage the key findings can be summarised as the following:

### **Chuula 1**

Chuula 1 (Morrison 2015:36-40) is a rock shelter site on a sandstone escarpment approximately 175m above sea level (ASL). The rock shelter walls are formed mostly of soft sandstone and it appears that some sections have broken away prior to investigation. Despite the shelter being adequate in size to limit direct water erosion from rain and runoff, the wet conditions of the CYP with the soft sandstone at this site are not conducive to preservation. Most of the rock art motifs are >1m from the ground, minimising impact from animal interactions (or perhaps as a result of any lower motifs being destroyed). The shelter floor measures 30m<sup>2</sup> and breaks away into a steep slope near the outer drip line. Three panels of motifs were identified, and all were obviously worn or faded (Figure 6).



*Figure 6 Orthomosaic showing the three panels identified at Chuula 1.*

### **Chuula 2**

Chuula 2 (Morrison 2015:40-44) is nearer to the bottom of the escarpment at 162m ASL, and approximately 50m east of CH-01. At this site the rock shelter walls are of a finer, smooth sandstone with layers of coarse pebble conglomerate. The sandstone varies between white, yellow and orange. It is a narrow 15m<sup>2</sup> overhang shelter facing east-south-

east on the eastern side of a sandstone outcrop. Three panels were also identified at this site (Figure 7) and were in varying conditions based on their relative locations within the shelter.

Panel 1 was very well protected, being a concave panel, high above the ground and thus protected from weather and animals. Panel 2 was in fair condition, being closer to the ground and suffering wear from animals rubbing on the surface as well as erosion of the substrate. Significant smudging and fading of pigment made identification in this intensively used panel somewhat difficult. Panel 3 is also in fair condition with similar issues to panel 2 of animals rubbing against the surface <1m from the ground. Erosion at the edges of this panel is also of concern.



*Figure 7 Orthomosaic showing the three panels identified at Chuula 2.*

## **Wa'tanchi**

This rock shelter, originally designated Ching'Ka (Morrison 2015:45-53) was the largest and also the most intensively used in the study with 5 art panels identified (Figure 8) and is located at the base of a 20m sheer escarpment and seasonal waterfall near a drainage gully. The escarpment features large exposed panels of fine-grained sandstone that are white to yellow-orange in colour with layers of rounded conglomerate.

Panel 1 was at the south-eastern end of the shelter, below a shallow overhang of less than 1m in width. Several recesses are also present with motifs included inside those recesses. The condition of this panel is poor due to direct weathering due to exposure to rainfall, excepting the concave recess designated Panel 1a, which was more protected due to its shape and position.

Panel 2 occurs behind a large boulder that has dropped from the shelter wall at some point and post-dates said collapse. It is in very good condition, due to its protected position far behind the drip line although there is some evidence to suggest lower motifs are suffering from animal interaction and general traffic. Despite its protected position there were few motifs found on this panel, though they were well preserved.

Panel 3 is relatively large extending along to the north east and curving under an overhang. It is in poor condition, displaying large amounts of black discolouration or staining due to direct weathering. The weathering is severe enough that in some cases it was impossible to tell whether colouring was due to application of pigment or red stains that naturally occur in the rock. The black staining may indicate damp conditions are creating conditions in which black mould thrives.

Panel 4 includes a recess at the northern end of the shelter and a single motif on the upper exterior surface of the recess. This panel is in fair condition, being rather well

protected from the weather. Low-lying petroglyphs have clear indications of damage including scratches on and near them and fragmentation and flaking of the edges. This is likely due to animal traffic and direct interaction. The sandstone surface is not particularly resistant to constant wear and thus the low position of these petroglyphs leaves them particularly vulnerable. The painted motifs on this panel are also showing some weathering and water damage.

Panel 5 is on the northernmost end of the shelter and is beneath another narrow overhang. This panel is in fair condition with the motifs being quite well protected beneath the overhang. Some wear via direct abrading from vegetation has occurred, but there is minimal art on the exposed edges of this panel, which is fortuitous for preservation.

Morrison (2015) noted that the rock shelter at Wa'tanchi was most suited to occupation and regular use, due to the depth of the shelter. Preliminary investigation in the survey showed that significant cultural deposits are present at the site, with artefact scatters apparent, and a partial stratigraphic profile revealed in a low cutting at the front of the shelter. The boulder that has come away from Panel 2 lies on top of these deposits, with the motifs added to Panel 2 post-dating that collapse, and thus post-dating those cultural deposits below the boulder.

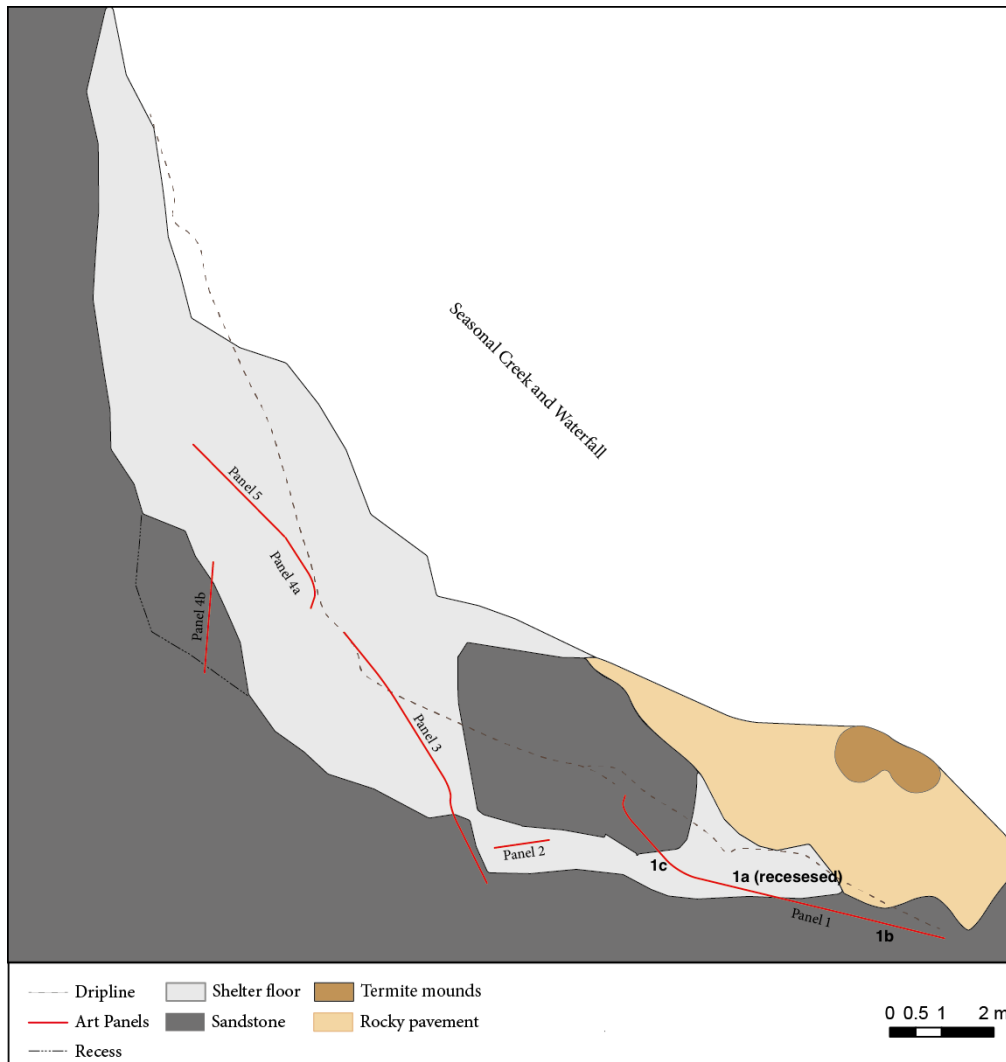


Figure 8 Site Plan of Wa'tanchi identifying the five main panel positions. Source: Morrison (2015:fig 20).

All three sites share several key taphonomic factors including the wet and humid conditions of the CYP region, encroachment from flora and fauna and the vulnerability of soft sandstone as the supporting geological surface of the rock art. The softness of the sandstone does vary both within and between the three locations, with finer sandstone being more suited to preservation of both pigment and petroglyph motifs. This region presents challenges in preservation and understanding the weathering of each site is important to making more correct inferences about patterns of site usage within Kuuku l'yu Ngaachi rock art sites.

## CHAPTER FOUR: METHODS

This project has employed in the first instance a formal analysis of rock art in three locations within Kaanju traditional lands in order to determine the artistic and representative features of the Kuuku I'yu rock art, and its relationship to the wider Cape York Peninsula and north-east Australian region. The rock shelters of Wa'tanchi, Chuula 1 and Chuula 2 were analysed and catalogued in a digital process, relying on high resolution photographic data and 3D model building. The output from this formal analysis may then be compared to previous data from the landmark regionalisation study by David and Chant (1995; see also David and Cole 1990) in which statistical spatial analysis based upon motif frequency and thematic/stylistic data was used to determine the extent and nature of regionalisation of rock art in the south-eastern CYP. It was hoped that a comparison to this study would allow an understanding of where Kuuku I'yu rock art fits contextually with rock art from other nearby cultural groups.

### DIGITAL ANALYSIS OF ROCK ART

#### EPISTEMOLOGY AND ESTABLISHMENT OF THE ORIGINAL DATASET

As in many cases of rock art investigation, financial concerns have a rather significant bearing on the options available in this project. Due largely to the remote location and the unwieldy cost of continued fieldwork on country, along with the desire to impact as little on the site as possible, the decision was made by Dr Mick Morrison to record the rock shelters Chuula 1, Chuula 2 and Wa'tanchi with digital photography and create 3D photogrammetric models of the sites for future research. This recording was completed in 2014, and the building of the model by Dr Morrison occurred in the period of 2015-2017 using Agisoft PhotoScan. The completed models were made available for this Master's Project, along with

the high-resolution photographs of the site, reports provided in confidence by the Chuulangun Aboriginal Corporation and a cultural heritage report written by Dr Morrison regarding the sites and their surrounds. Thus, this is a digital project, and is an opportunity to test the viability of working on rock art sites from digital 3D recording methods from the outset. In the past digital 3D models and virtual reality have been used mostly for dissemination or education to the public as a final product, rather than an integral part of the archaeological process (Hermon 2008).

Digital approaches to archaeology that minimise contact with sites, especially sites such as rock shelters and caves with fragile pigment and engraved art will always be preferential to traditional approaches such as the use of mounted grids for copying, rubbings or analogue photography that encouraged prolonged contact, and thus site wear and degradation (Domingo 2014). Although the storage and working of large, unwieldy files have been an issue for institutions working with 3D models, recent advancements in the last 10 years are making them more approachable and useable for smaller projects that would have either not been viable, or cursory at best due to limited funding and resources (Domingo et al. 2013). Further, some of these digital approaches are now proving to be highly accurate, and in many cases can assist researchers in determining features that were either invisible to the naked eye or difficult to see by processes such as colour selection in Photoshop and colour manipulation and enhancement in DStretch (a plugin for ImageJ software) (Domingo et al. 2013; McDonald 2016).

Initial photography from the 2014 survey was undertaken under the following process (Morrison 2015:25):

1. *Wide angle photogrammetry. A Tamron 18-270mm telephoto lens was fixed at an 18mm focal length. Although this is a poor lens for taking accurate images of rock art, the relatively wide angle allowed for a sequence of photographs of the overall layout of the shelter and the relative position of art panels and major features. Images were taken at 2-4m from the shelter wall. The resulting models show the overall layout of the site.*

2. *Low-distortion photogrammetry. A Canon 50mm prime lens was used to obtain high-accuracy and low distortion images of the rock art, however, the narrower focal length and the restricted working area within each shelter meant that many more images needed to be taken from a very close range. As such, images were taken at 0.50-2m from the shelter wall. The resulting model contains a very high accuracy and resolution depiction of individual art panels.*

*Images were taken in RAW image format and those intended for photogrammetric modelling were taken obliquely, and at a consistent distance from the shelter wall. Some difficulties were encountered with those images very high up or that were beneath low overhangs. In the case of the former, there were typically vantage points close by, and that had probably been used by the artists themselves, while those beneath low overhangs that could not be photographed were rare...*

*All images were post processed in Adobe Lightroom<sup>®</sup> with a simple workflow that first involved applying the lens correction profile for the specific lens types used... In addition all images had consistent colour corrections applied.*



## DIGITAL FORMAL ANALYSIS

Investigation of the rock shelters was done via the completed 3D model in Agisoft PhotoScan completed by Dr Morrison in 2015 and original site photographs obtained via the above method, with motif identification and designation being done in each shelter working roughly left to right, top to bottom. Motifs were labelled based on their site and panel and then given a unique number. Therefore CH01-1-1 Was Chuula 1, Panel 1, motif 1, whilst WT01-3-219 was Wa'tanchi, Panel 3, motif 219. A motif may be identified by their full designation or the final unique number. Once a motif or motif group (in the case of series – see schema below) was identified, it was classified, described and noted in a master visual index that existed for each panel. Some of these were orthomosaics of the panels, others were photographs, whichever was the most useful in identifying as many motifs as possible. In some cases the motif indices were made from an image processed in DStretch to illuminate as many motifs as possible.

Once motifs were identified, classificatory information was recorded and tabulated for each motif (Table 1).

<b>GENERAL TECHNIQUE</b>	
PETROGLYPH	Images created by the removal of rock from the rock surface via pounding, abrading, engraving, tapping or any other extractive method. the techniques were recorded based upon Maynard's (1977) model of scratching, abrading, rubbing, pounding, pecking and drilling, although not all of Maynard's categories were observed. Petroglyphs that had been filled with paint were noted, but still classed as petroglyphs.
PICTOGRAPH	Pictographs are any images created by the application of pigment to the rock surface
<b>SPECIFIC TECHNIQUE</b>	
PECKED	Removal of rock surface via repetitive percussive or gouging actions, using a tool
ENGRAVED	Removal of rock surface via repetitive abrading in a back and forth or circular motion with a tool – usually another rock
INCISED	Removal of rock by gouging with a sharp tool

OUTLINE	A painted image that forms only the outline of an image with little or no fill		
INFILLED/SOLID	Images that are completely painted, or that are 'stick figures,' painted so that no internal fill is required		
STENCIL	Refers to hand motifs where negative space is highlighted by applying pigment around an object that is placed on the rock surface.		
INDETERMINATE	Method unknown		
COLOUR			
Red	White	Orange	Brown
Black	Yellow	N/A (Petroglyphs)	

Table 1 Basic recorded attributes for formal analysis.

Contrast state as a measure of weathering over time (Donaldson 2011:38-9) was also recorded for petroglyphs (Table 2) following McDonald (2016:921-922) and Mulvaney (2015), classing motifs as between 1-5, with 1 being indicative of an 'older' or more weathered motif and 5 indicating a clearly visible 'fresh' motif per the following definitions:

CONTRAST STATE	DEFINITION
1	Worn and heavily weathered. No difference between colour of surface inside extracted petroglyph and the current state of the surrounding surface. The edges of petroglyph may be indistinct and/or blurry
2	Some colour difference between petroglyph and surrounding rock surface. Significant weathering is apparent, and edges of petroglyph may be indistinct and/or blurry
3	Clear colour difference between petroglyph and surrounding rock surface. Some weathering and blurred edges likely apparent.
4	Obvious colour difference between petroglyph and surrounding rock surface. Weathering and blurring are likely minimal, and petroglyph is easy to see
5	Significant colour difference between petroglyph and surrounding rock surface. Should resemble somewhat fresh scratches or breaks in local rock of the same formation. Petroglyph edges are still quite fresh and image is clear.

Table 2 Contrast State Definitions used for KIRAP petroglyphs.

## DEVELOPMENT OF THE RECORDING SCHEMA

As a part of initial research activity into Kuuku l'yu rock art, this thesis focusses mostly on formal identification, classification and analysis of rock art motifs, with the intention of relating the data from such an inquiry to existing data sets in surrounding areas.

Of course, in order for comparison to existing data sets to be achievable, the parameters of data collection must be relatable and comparable to the existing data, namely that which was used in the study by David and Chant (1995) and the reports from which they sourced their data to examine regionalisation in north Queensland. In the development of a schema for this project, several epistemological concerns influenced the outcome. The first concern was the 'emic' vs 'etic' issue, in which the researcher, being not initiated into Kaanju social or cultural practices, was an outside or 'etic' observer, making decisions about *what* they are perceiving and what was meant to be shown without intimate knowledge of the context in which rock art was executed (Melas 1989; Morphy 1999). Archaeological approaches in general have accepted the etic nature of interpretive analysis of any kind, and as such, the statement that the nomenclature does not denote the full or partial meaning of a motif is generally considered adequate (Franklin 2004:28). That is the approach taken in this study, and thus while motifs are classified by terms such as 'macropod' or 'track,' it is not suggested here that this is the entirety of the potential meanings of a motif, or even the primary intended meaning (Cole 2011; Morphy 1999). Rather it is the form by which it is most recognisable to the modern observer for the purposes of basic description.

Another concern in the development of the classificatory schema was whether a 'lumping' or 'splitting' approach to sub-groups and motif classes thought to be associated (Adams 1988). A balance must be struck between schemas that are overly simplistic, 'lumping' too many varying types under broad and often somewhat arbitrary categories. As splitting (e.g. splitting animals into sub-species) should be consistent and meaningful, it was avoided until such a time as the split was needed or deemed too important to ignore, such as in the understanding that the difference between freshwater tortoise and marine turtle is

likely to inform about food ways and trade behaviours, rather than just the presence of 'turtles' as a broad category. In cases such as this, splitting was followed.

Similarly concerns with counts of motifs have bearing here too, for example in classifying and counting groups of vertical lines: are there 35 individual line motifs or one group of lines? Morwood's (1979:table 7:3) 'series' model was used, including stacked series, classifying them as a singular group, rather than individually to prevent skew in any statistical analysis. In principle, tracks were considered as a unit, in pairs and as a series when more than three are visually grouped and appearing to form a longer series of tracks, however only single tracks were recorded in this study.

In their analysis, David and Chant presented classificatory schema that were varied, depending upon the site that was investigated and often following the primary researcher. For example, the schema used by Flood (1987:table 5) in her identification of motifs in the Koolburra Plateau was presented alongside the slightly different schema from Walsh for the Flinders Island Group (with additions from unpublished material in David and Chant 1995:table 35). Data was generally presented as it came from initial investigations and was not altered to fit a master schema created by the researchers, although amendments were made in some cases where further research had clarified issues or shown a previous interpretation to be correct, as with Maynard's schema for the Laura River (David and Chant 1995:table 47). Although there is some disagreement in the literature on naming conventions of some motifs, such as that between Rosenfeld (1981) and Flood (1987) regarding tridents and bird tracks (for discussion see Franklin 2004:30-32), generally a workable consensus exists between researchers in northern Queensland, which was enough for good results in David and Chant's 1995 study. Accordingly, there is no singular existing

schema by which Kuuku I'yu art might be classified, but there is also no need to develop an entirely new system as schema can often be adopted and honed to a new purpose (Adams 1988). Where possible the accepted (most commonly used, and/or currently accepted in the literature) nomenclature was used for motif identification. Although problematic as another example of etic arbitrary classification that may well be meaningless (Franklin 2004:28), the terms 'figurative' and 'non-figurative' are kept as broad groupings with motifs being classed under these headings, as it is an important part of the David and Chant regionalisation study.

#### KUUKU I'YU ROCK ART SCHEMA

The data gathered and tabulated for this project (Appendix 1) was kept in a shared Google Sheets document to allow collaboration between Dr Morrison and myself, was regularly backed up and uploaded to the Open Science Framework (OSF) website with password protection for access and oversight by David Claudie as representative of the Chuulangun Aboriginal Corporation. Photographs, tracings and results were held on the Flinders University servers, or where appropriate DropBox and OSF. The schema developed for this project was tripartite in structure, based upon Brady and Bradley (2014) and becoming more specific and detailed in each step of the categorisation process. Initial observations were made of the 'motif category,' then 'motif class' and finally 'motif type.'

Motif Category referred simply to either a motif being Figurative, Non-figurative or Track. Figurative motifs are defined in this study as being those motifs in which a represented object, person, animal etc... is clearly identifiable from a researcher's perspective (Maynard 1977). That is not to say that it is the only possible intended subject or meaning. Conversely nonfigurative motifs are those that may be more abstract in their




design, or that in viewing “the uninformed observer cannot arrive at any helpful associations for naming the figure[s]” (Maynard 1977:396) aside from description of their basic form[s]. Tracks refer to indications of markings left by the paws, feet, hands or other impressions from animals or humans.









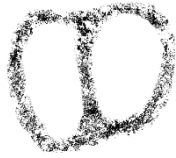



Motif Class then specified broad ‘subject designations’ as the following:

<b>FIGURATIVE</b>	
Anthropomorph	Zoomorph
Human	Animal
Artefact	Contact
<b>TRACKS</b>	
Bird Tracks	
<b>NON-FIGURATIVE</b>	
Geometric	

*Table 3 Motif Class Designations.*

Lastly Motif Type was the most specific designation and was used to refer to specific forms outlined in Table 4 below. For full definitions see Appendix 1.

<b>FIGURATIVE</b>	
<b>HUMANS</b>	
Human	Man 
Deceased Human 	Anthropomorph 

<b>ANIMALS</b>	
Dog 	Freshwater Tortoise 
Lizard 	Macropod 
Marine Turtle 	Stingray 
Zoomorph 	
<b>POST CONTACT FIGURATIVE</b>	
Lettering 	
<b>NON-FIGURATIVE (GEOMETRIC)</b>	
Complex circle 	Complex Geometric 
Complex Lines 	Crescent 


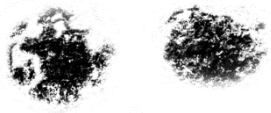



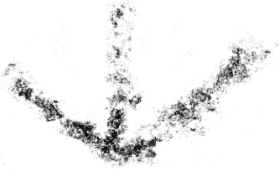
Dots	Line (horizontal, vertical, undulating, following natural geometry of the rock)
Line Series 	Pit 
Radiating Lines 	Single circle 
Star 	
<b>TRACKS</b>	
Bird track 	

Table 4 KIRAP schema for motif identification. Images are examples from the KIRAP dataset.

## DSTRETCH

DStretch<sup>®</sup>, a plugin for the 'ImageJ' software program (For discussion see Brady and Gunn 2012:632) was used to view all motifs and sections where rock art was suspected even where it was difficult to see. The DStretch filters for all motifs that produced the best contrast results were recorded, along with any manually adjusted filters that increased motif visibility. Understanding which DStretch RGB filters are most effective can assist in understanding the colours of the rock and any applied pigment including evidence of recursive art, and can assist with determining contrast state (McDonald 2016:923), which is



why all filters were cycled through and observed, with multiple examples often saved rather than just the most effective for illuminating detail.

## TRACING

For those motifs selected for tracing, two divergent techniques were employed depending upon the needs of each motif. For motifs that had been difficult to photograph straight-on in the field, an orthomosaic was made in Agisoft PhotoScan, converting the 3D data into a flattened 2D image for tracing (Workflow>Build Orthomosaic: Planar: mosaic) and then exported as a TIFF at the highest resolution possible. In some instances orthomosaics contained sections of blurry areas, or even sections of the shelter that had been cropped out obscuring the motifs. This was due to the wide-angle context shots and as such in only in those cases of blurring or obscuring, the wide-angle shots were disabled one-by-one until the problematic photograph had been isolated and removed from the creation of the orthomosaic. When creating orthomosaics of motifs that rested on uneven rock surfaces, results were mixed and thus required some judgement. At times the creation of the orthomosaic distorted the motifs to a point that was unacceptable, despite numerous attempts from various minute differences in angle and approach. In those cases, comparisons were made to the high-resolution close-up 50mm digital photographs from the field. In each case, the representation deemed the *most* representative was taken for tracing, whether that was the orthomosaic or the field photograph. In the case of images that were captured well by the field photography in a straight-on 90° angle (orthogonally), the photograph was used for tracing as even with rebuilt textures, the resolution of photographs was far higher than the images from the 3D model and demonstrated a

limitation of current 3D models and the tenuous balance between creating models that are useful for analysis without being 'heavy' to the point of being unusable.

Initially a tracing of each motif was a goal of the project, however the above issues of skew, blurriness and the difficulty of photographing some motifs orthogonally meant that tracings were unlikely to be truly representative in many cases. Therefore, representative tracings were made of each motif class, as well as tracings of some superimposed motifs or complex motif groupings that would be assisted by separating out the different elements for analysis. As a technical aspect of recording, tracings facilitate visualisation of themes and overlapping motifs not only to aid in analysis (Brady and Gunn 2012), but also diffusion of information in a meaningful and concise fashion. They also have a further cultural heritage management application in assessing degradation and weathering over a period of time, and may serve as a baseline for comparison at later dates (Domingo et al. 2013:1880). Despite initial intentions to complete tracing somewhat manually in this project using the curvature tool in Adobe Illustrator, it became clear very quickly that this method was rather

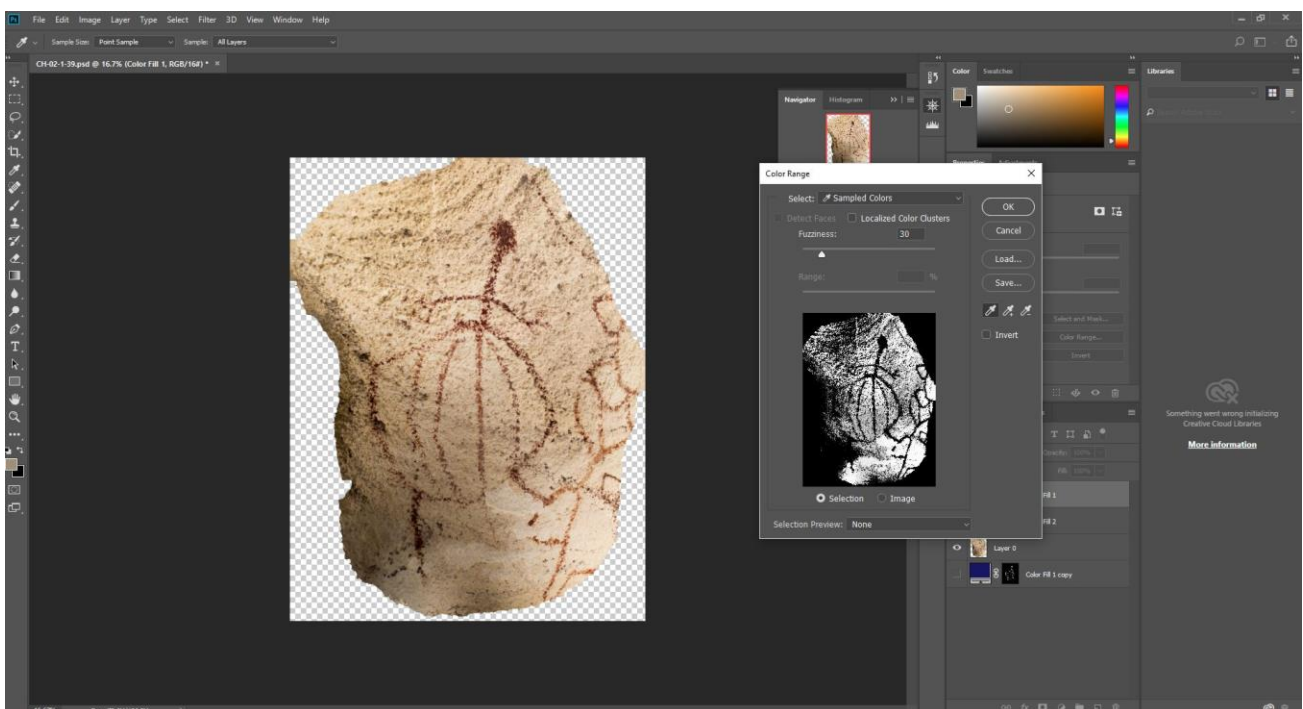


Figure 9: Color Range tool in Adobe Photoshop.

tedious and open largely to interpretation. Further, it did not utilize the digital data that the photography had collected to its full potential.

A more 'digital' method of colour contrast enhancement in DStretch (Brady and Gunn 2012; McDonald 2016) paired with colour tool selection in Photoshop (Cacho Toca and Gálvez Lavín 1999; Domingo and López-Montalvo 2002; Domingo et al. 2013; Domingo Sanz 2014) was employed (Figure 9). As Photoshop, working in multiple colour ranges including RGB (human perception), CMYK and grayscale is able to detect and reproduce millions of colours more than the human eye, it is theoretically able to detect more subtleties of the image than the human observer, which can be utilised by sampling part of the colour of a painted motif, or of patinated rock (e.g contrast state. See: McDonald 2016), and allowing for 'fuzziness' or acceptable margin of variation for Photoshop to identify and highlight (Cacho Toca and Gálvez Lavín 1999). In cases of motifs with colour variation, multiple colours can be selected with the dropper tool until the entire motif has been highlighted by Photoshop. Once this has been done, and any incidental results have been 'cleaned up' (this is especially needed in blurred or badly faded areas that are close to the hue of the natural rock surface), the application of colour of the researcher's choosing as a layer mask to those highlighted sections in a new layer gives an accurate representation of where pigment exists, rather than a smoothed line that the researcher perceives that may not accurately represent the motif itself (Domingo and López-Montalvo 2002; Domingo et al. 2013). This approach not only allows for more accurate 'tracing' or copying of motifs, it is also faster in some cases, and able to demonstrate polychromy in motifs, as well as overlaying motifs that are otherwise nearly impossible to discern individually, especially in heavily weathered examples (Brady and Gunn 2012; Domingo et al. 2013: *Figure 4*).

## HARRIS MATRICES

The use of Harris Matrices in rock art studies was first suggested by Chippindale and Taçon (1992) in their analysis of Arnhem Land rock art in order to analyse and verify stylistic sequences in the region. The Harris Matrix was originally designed to be a diagrammatic method of representing deposition layers or the 'stratigraphic sequence' of excavated trenches in a consistent and clear manner to make section drawing and interpretation more straightforward and was based on the geological principle of superposition (Harris 1975). Each unit generally refers to a deposit situated in succession so that in complex stratigraphic sequences upper units or strata are unlikely to touch the bottom units or bedrock in many cases. This is fundamentally not the case in rock art sequences in which despite heavy superimposition, motifs may touch both the base rock itself, and perhaps many other motifs at the same time (Pearce 2010). The discontinuous nature of rock art fundamentally means that each application of pigment does not necessarily overlap each older example and thus 'episodes' or phases of rock art are not able to be determined in the same manner as the traditional Harris Matrix model assumes (Pearce 2010) as one cannot tell what the temporal relationship may be between two motifs that have no physical relationship through which one might discern which was painted first.

In creating Harris Matrices for this project, it was acknowledged that complex superimposition relationships would be few, and that rather than being the vertical diagrams usually associated with the model, horizontal diagrams would dominate with many motifs having no relationship to anything other than the rock upon which it was painted or the image extracted. Assumptions of relatedness based upon colour were avoided as they only indicate the source of pigment may be the same and localised, and do

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not indicate the temporal relationship between two motifs. Only cases of direct superimposition were noted and interpreted in the creation of the Harris Matrices for those panels that were deemed informative enough to warrant the creation of a Matrix. The Harris Matrices created for this project can be found in Appendix 3.

## CHAPTER FIVE: RESULTS

Formal analysis within the KIRAP study area of three sites, Chuula 1 (CH01), Chuula 2 (CH02) and Wa'tanchi (WT01), identified 261 motifs, 199 of which were pictographs (76%) and 62 were petroglyphs (24%). Motifs were not evenly distributed across the three sites (Table 5), as Chuula 2 and Wa'tanchi were larger rock shelters with more decorated panels than Chuula 1. Distribution of technique was also uneven, with petroglyphs being most common at Chuula 1 but far less frequent at Wa'tanchi. In fact, the higher the total number of motifs in each site across these three locations, the more prevalent pictographs are over petroglyphs in general.

Site	Count of Motifs	Percent of Total	No. of Petroglyphs	No. of Pictographs
<b>Chuula 1 (CH01)</b>	38	14.56%	20	18
<b>Chuula 2 (CH02)</b>	100	38.31%	31	69
<b>Wa'tanchi (WT01)</b>	123	47.13%	11	112
<b>Total</b>	261	100%	62	199

Table 5 Count of motifs and respective techniques across Kuuku I'yu Ngaachi.

### PETROGLYPHS AND CONTRAST STATE

Contrast state	CH01	CH02	WT01	Total
1	1	0	11	12
2	10	7	0	17
3	9	15	0	24
4	0	7	0	7
5	0	2	0	2
<b>Total</b>	<b>20</b>	<b>31</b>	<b>11</b>	<b>62</b>

Table 6 Summary table of contrast states recorded for petroglyphs across all three sites.

To understand the relative ages of petroglyphs across the three sites, their contrast state, or the degree to which the internal surface of a petroglyph had weathered to once again resemble the rest of the rock surface around it was measured (Table 6), from

1 being heavily weathered to 5 being seemingly fresh. A contrast state of 3 was most

common ( $n=24$ ), indicating some weathering and abrasion of edges, but a definite difference in colour between the petroglyph surface and the surrounding rock. Also evident was the relatively few newer or 'fresher' examples belonging to contrast states 4 ( $n=7$ ) and 5 ( $n=2$ ). As expected one of the two motifs designated contrast state 5 was the European letters 'R.K.A,' (CH02-3-115).

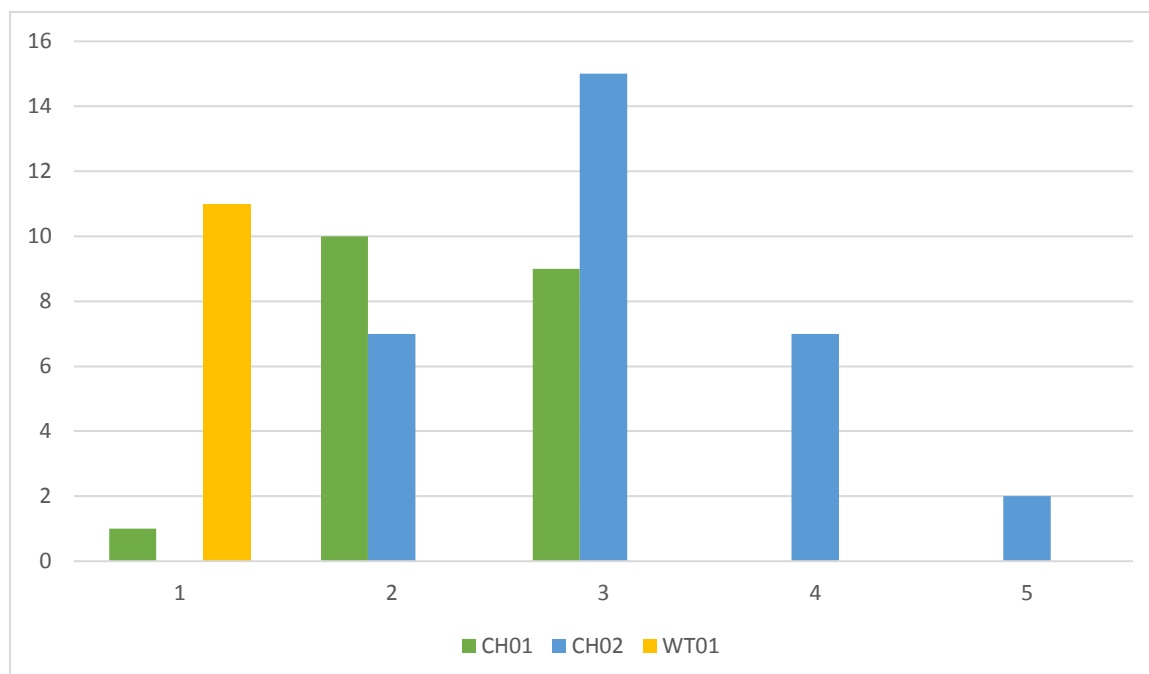


Figure 10 Contrast states (1-5) recorded across KIRAP. Data pulled from Table 6.

It is clear from Figure 10 that variation exists within each site, although some general comparative comments may be made. Firstly, the data suggests that the earliest use of petroglyphs occurred at Chuula 1 and Wa'tanchi. However this must be assessed with caution for the Wa'tanchi examples as Morrison (2015:53) noted that this area of the rock shelter (Panel 4) is lower to the ground and thus vulnerable to destructive taphonomic processes such as animal interaction and weathering that may have made them appear older than they are in comparison to other petroglyphs at Chuula 1 and Chuula 2; although the consistency for all 11 of the Wa'tanchi petroglyphs indicates that they are perhaps of a similar age to each other.

## COLOUR USAGE



Figure 11 CH02-2-80 showing petroglyph with red infill.

The colours used in all three sites are restricted to variations of red, brown and a few examples of a much brighter yellow (Table 7). There were no bichrome examples recorded in pigment, although outlining or infilling of petroglyphs did occur (Figure 11). Brown was

the most commonly used colour (n=184), in part due to it being the predominant colour used at Wa'tanchi, which was the largest sample. Red (n=23) was the next

Colour primary	CH01	CH02	WT01	Total
Brown	4	69	111	<b>184</b>
Red	20	2	1	<b>23</b>
Yellow	0	2	0	<b>2</b>
Not applicable	14	27	11	<b>52</b>
<b>Total</b>	<b>38</b>	<b>100</b>	<b>123</b>	<b>261</b>

Table 7 Summary table of colours observed at each site.

most common, followed by yellow (n=2).

Not applicable was used to refer to petroglyphs with no colour added, while a colour was given to a petroglyph if pigment was applied to it as in Figure 11. Each site had a clearly dominant colour, being red at Chuula 1, and brown at both Chuula 2 and Wa'tanchi, however both Chuula 1 and 2 showed some breadth in colour usage with three colours present at Chuula 2. Wa'tanchi was the most homogenous with almost complete use of brown excepting one red example. Variation in depth and intensity was observed, and at times red-brown was observed and a decision of red or brown was made in classification.

Due to the constraints of relying upon photography simple classifications were made in the hope that this could be refined in the field at a future date.



## MOTIF CATEGORY

<b>Motif Category</b>	<b>Petroglyph</b>	<b>Pictograph</b>	<b>Total</b>
Figurative	2	70	<b>72</b>
Non-Figurative	45	95	<b>140</b>
Track	15	17	<b>32</b>
Non-diagnostic	0	17	<b>17</b>
<b>Total</b>	<b>62</b>	<b>199</b>	<b>261</b>

*Table 8 Distribution of motif categories across the two main techniques of petroglyph and pictograph.*

Motifs were identified on a tripartite hierarchy of description (based on Brady and Bradley 2014). The first and broadest designation of motif category was either figurative, non-figurative or track (Table 8), the main designations that have been used in prior rock art studies in the CYP region (especially David and Chant 1995). Petroglyph and pictograph numbers were also noted.

Figure 12 demonstrates these totals as comparative percentages, indicating differential subject matter between petroglyphs and pictographs, with petroglyphs much more likely to be used with non-figurative or track motifs, while pictographs are used more heavily for figurative motifs. It also demonstrates that in this case petroglyphs are less likely to be unidentifiable at this initial stage. This is likely due in part to the fact that they are most represented by the geometric and simple to identify 'non-figurative' group, but also the nature of petroglyphs in general. Their weathering is much more likely to keep some semblance of the original shape, whereas pictographs are prone to smudging and bleeding from water damage, as well as complete erasure.

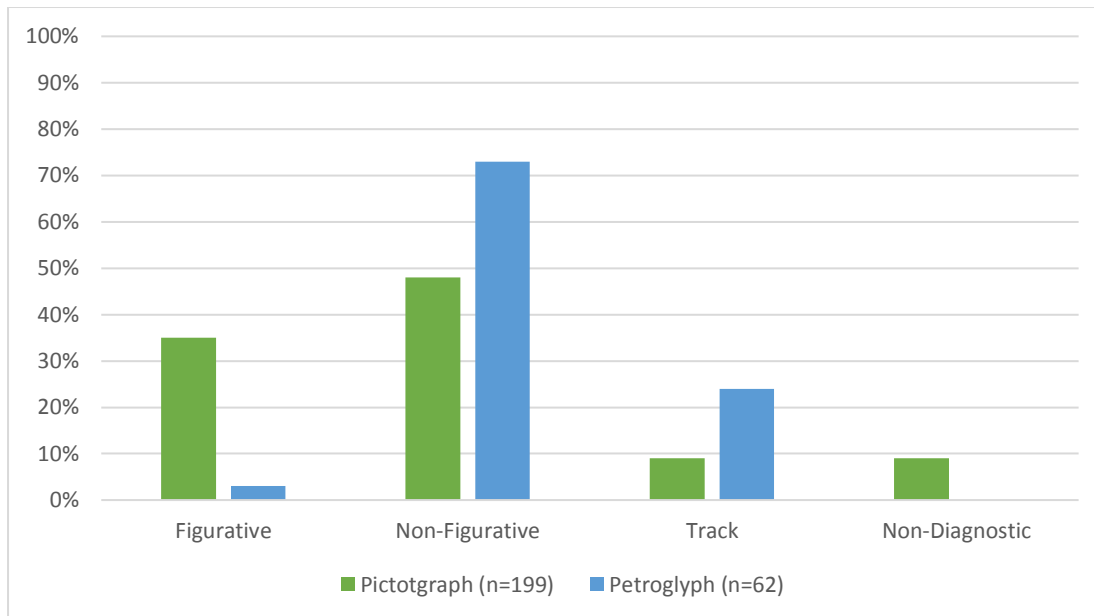


Figure 12 Percentages of motif categories for each general technique for all three studied Kuuku I'yu Ngaachi sites.

## MOTIF CLASS

Motif Class	Number
Geometric	140
Tracks	32
Human	29
Animal	17
Anthropomorph	9
Zoomorph	2
Contact	1
Artefact	1
Non-diagnostic	30
<b>Total</b>	<b>261</b>

Table 9 Distribution of motif classes across all three locations.

The second stage of identification was noting larger groups or motif classes, such as animal, human, geometric and so on. In many cases, this was the highest level of classification possible, for example, many human figures could not be classed as male or

female. Thirty motifs were classed as ‘non-diagnostic’ at this stage, while the largest grouping was geometric, which covered all the non-figurative motifs (Table 10).

While the motif class was not useful so much for comparison with previous studies (e.g. David and Chant 1995), it was helpful in understanding subject matter trends. While it is acknowledged that the ‘subject’ is often interpretive, it was helpful to potentially identify whether there were different concerns or focuses at different sites within the same study area. Summary data in Table 10 (see also Figure 13) demonstrates that while all three sites contained a large proportion of geometric (non-figurative) motifs, Chuula 1 was very much

<b>Motif Class</b>	<b>CH01 #</b>	<b>CH01 %</b>	<b>CH02 #</b>	<b>CH02 %</b>	<b>WT01 #</b>	<b>WT01 %</b>	<b>Total #</b>	<b>Total %</b>
Geometric	27	71.05%	30	30%	83	67.48%	141	<b>54.02%</b>
Tracks	6	15.79%	16	16%	10	8.13%	32	<b>12.26%</b>
Human	0	0%	26	26%	3	2.44%	29	<b>11.11%</b>
Animal	1	2.63%	14	14%	2	1.63%	17	<b>6.51%</b>
Anthropomorph	0	0%	2	2%	7	5.69%	9	<b>3.45%</b>
Zoomorph	0	0%	2	2%	0	0%	2	<b>0.76%</b>
Artefact	0	0%	0	0%	1	0.81%	1	<b>0.38%</b>
Contact	0	0%	1	1%	0	0%	1	<b>0.38%</b>
non-diagnostic	4	10.53%	9	9%	17	13.82%	30	<b>11.49%</b>
<b>Total</b>	<b>38</b>	<b>100%</b>	<b>100</b>	<b>100%</b>	<b>123</b>	<b>100%</b>	<b>261</b>	<b>100%</b>

*Table 10 Summary data of the distribution of motif classes across the three KIRAP sites.*

dominated by these geometric motifs, with some tracks and a small percentage of animals, a rather restricted spread of motif types. Chuula 2 by comparison came close to an even distribution of geometric and human motifs (30% and 26% respectively). Tracks and animals were also well represented at Chuula 2. At this level of analysis Wa’tanchi somewhat

resembles Chuula 1 in the percentages, with geometric being far more represented than tracks and anthropomorphs, which are the next two most represented classes.

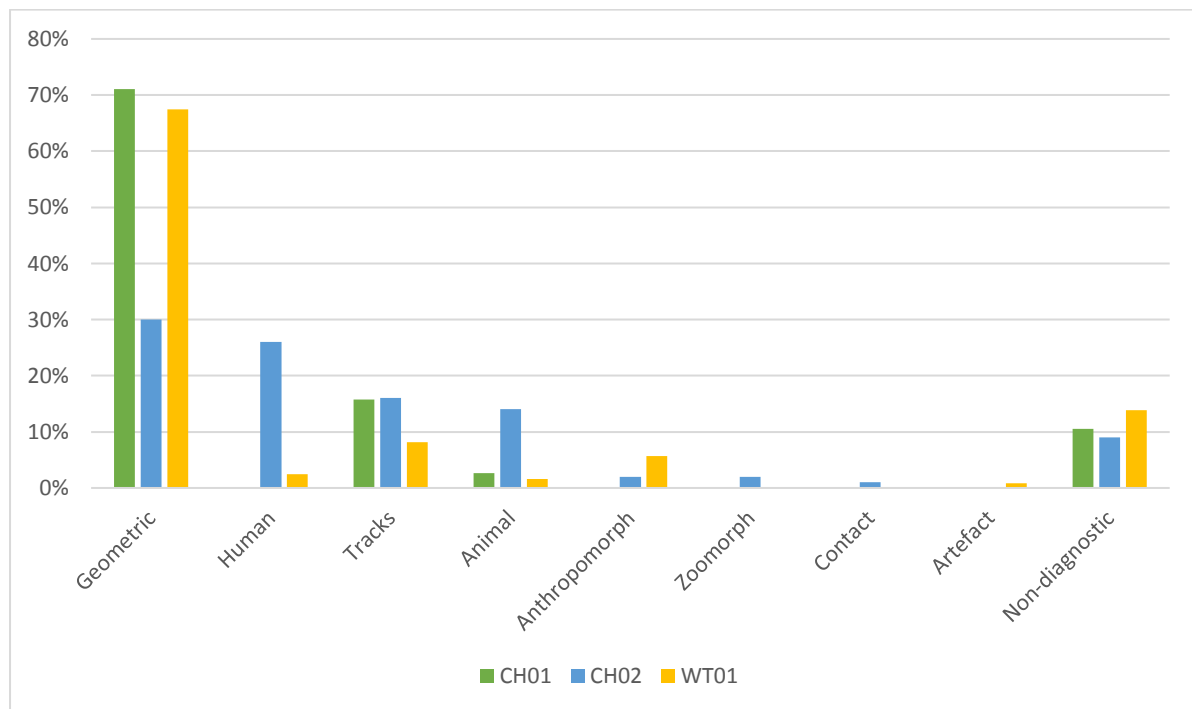


Figure 13 Comparison of distribution of Motif classes by site as a percentage. Data pulled from Table 10.

## MOTIF TYPE

The third and most specific level of identification was of motif type. The purpose of this level of identification was to be as specific and informative as possible to demonstrate the variability of motifs within the broad groupings dealt with at the first two levels of identification. Of the 261 identified motifs, 224 were positively identified as a specific motif type, whilst the remaining 37 were classified as 'non-diagnostic' in cases where their identity could not be certain (Table 11), although record was made of what it was thought they may represent (see Appendix 2).

<b>Motif Type</b>	<b>CH01</b>	<b>CH02</b>	<b>WT01</b>	<b>Total</b>
Complex lines	2	8	26	<b>36</b>
Line Series	11	4	19	<b>34</b>
Bird track	6	16	10	<b>32</b>
Human	0	18	1	<b>19</b>
Crescent	4	4	7	<b>15</b>
Anthropomorph	0	2	7	<b>9</b>
Marine Turtle	0	8	0	<b>8</b>
Line	0	3	4	<b>7</b>
Line along natural geometry	3	1	3	<b>7</b>
Man	0	5	1	<b>6</b>
Single circle	1	4	1	<b>6</b>
Lizard	1	3	1	<b>5</b>
Complex geometric	0	0	4	<b>4</b>
Line undulating	0	1	3	<b>4</b>
Dots	0	0	3	<b>3</b>
Horizontal pit series	2	1	0	<b>3</b>
Radiating lines	0	1	2	<b>3</b>
Stacked line series	0	1	2	<b>3</b>
Star	0	0	3	<b>3</b>
Complex circle	0	0	2	<b>2</b>
Line horizontal	1	0	1	<b>2</b>
Pit	1	0	1	<b>2</b>
Freshwater tortoise	0	2	0	<b>2</b>
Deceased human	0	0	1	<b>1</b>
Dog	0	1	0	<b>1</b>
Lettering	0	1	0	<b>1</b>
Macropod	0	1	0	<b>1</b>
Pit cluster	0	1	0	<b>1</b>
Stingray	0	0	1	<b>1</b>
Tool sharpening	1	0	0	<b>1</b>
Vertical pit series	0	0	1	<b>1</b>
Zoomorph	0	1	0	<b>1</b>
<b>Total</b>	<b>33</b>	<b>87</b>	<b>104</b>	<b>224</b>

*Table 11 Distribution counts of motif types across the three sites.*

A few motif types were more common than most others, including complex lines ( $n=36$ ), line series ( $n=34$ ), and bird tracks ( $n=32$ ), while many others appear only once, such as the European letters, stingray, deceased human and dog.

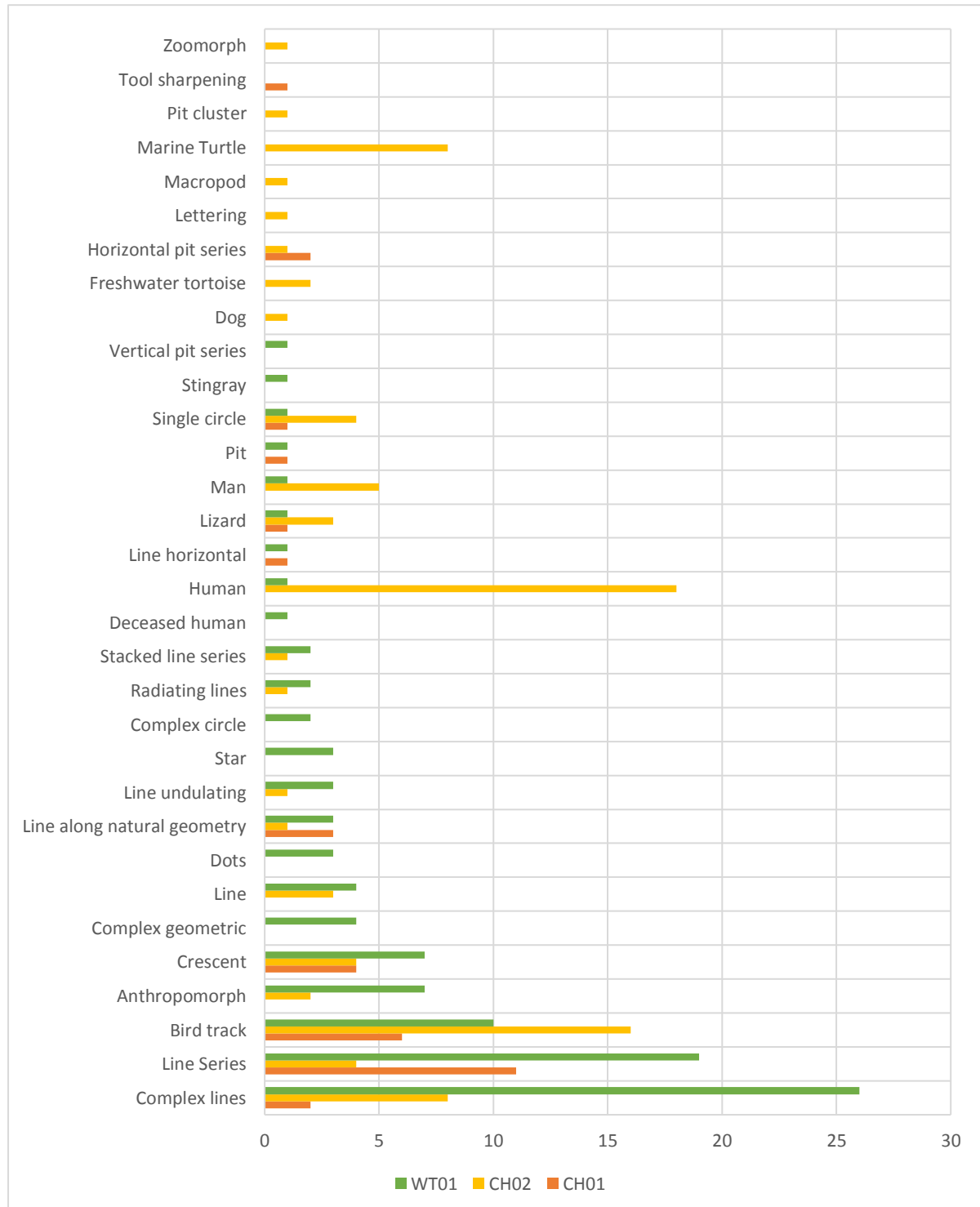


Figure 14 Comparison of motif types distribution across the three sites. Raw data is pulled from Table 11.

Once again, these results can be further understood by identifying the distribution of these motifs across all three of the sites within the KIRAP purview as in Figure 14. The number of unique motif types at Chuula 1 ( $n=11$ ) is less than those at Chuula 2 ( $n=22$ ) and Wa'tanchi ( $n=23$ ). Notably the proportion of unique motifs at each site is inversely related to the overall number. Thus Chuula 1 has the highest percentage of unique motifs at 29%, then Chuula at 22%, then Wa'tanchi at 19%. This indicates that the presence of more motif forms does not necessarily indicate more *unique* types, and that at a certain point, new motif forms will become rarer, and thus less of a percentage of motifs overall. It also indicates that even in areas of short-term and/or less intensive use that there is still a varied array of forms and meanings being signified in a site.

#### CHUULA 1 MOTIF USAGE, SITE USAGE AND FEATURES

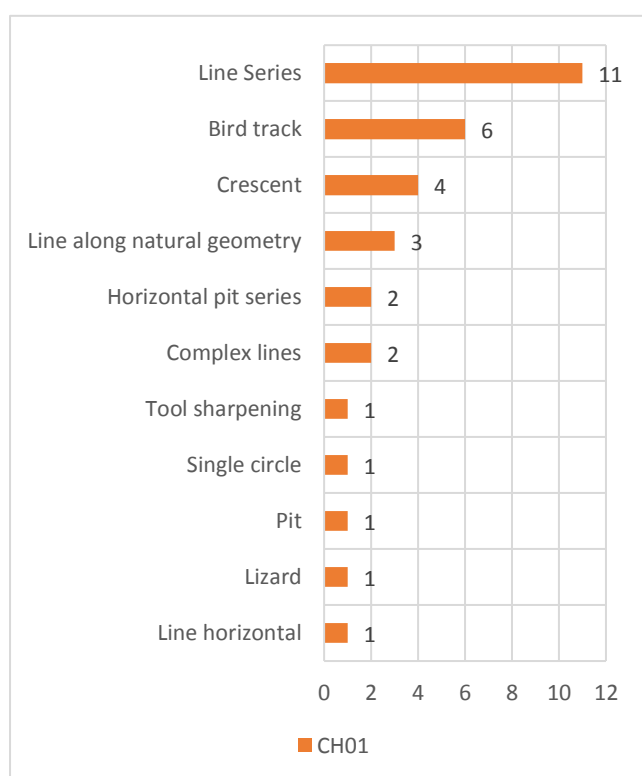


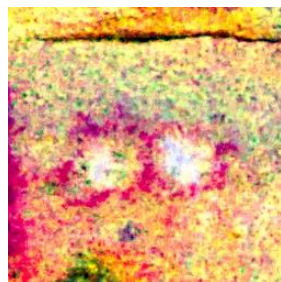
Figure 15 Count of motif types at Chuula 1.

While Chuula 1 (Figure 15) features mostly non-figurative motifs, the presence of a lizard and several bird tracks demonstrates some variety to the depictions at that site. The prevalence of line series in this site is immediately apparent even prior to analysis and is the most visually obvious repeated motif. The high proportion of petroglyphs (47% Figure 10) is somewhat expected considering the non-figurative and track

as dominant motif classes, but overall this indicates that site usage patterns at Chuula 1

were typified by the more time-consuming practice of creating non-figurative petroglyphs. The use of petroglyphs at this site may be explained by the nature of that particular rock shelter. Much of the surface of Chuula 1 Panel 1 is rough and some parts are quite convex, making pigment a poor choice for clarity and longevity. In some areas motifs on Chuula1 Panel 1 were placed at the edge of a lip (CH01-01-6) or in a more convex portion of the wall (CH01-01-12 and CH01-01-13), which may indicate a conscious choice in positioning. The use of the natural geometry of the rock to guide three linear motifs was also noticeable in Panel 3. Panel 2 was far flatter and more suitable for pigment art and indeed holds many of the pictographs at that site and no petroglyphs however the wear on this panel was extensive.

Chuula 1 results also show reiterative practice with the application of pigment to existing petroglyphs, especially line series (Figure 17), as well as the recreation of what was likely pigment line series in petroglyph form over the top. One motif (Figure 16) showed deliberate and careful outlining of two pits in red pigment. In total 14 of the 20 petroglyphs at this site show elements of pigment being applied to the same or similar motif either before ( $n=2$ ) or after ( $n=12$ ) the creation of the petroglyph. Therefore, although Chuula 1 appears to be a site with a high number of petroglyphs, the reiterative use of pigment was an integral part of usage patterns there. Although some superimposition (as apart from reiterative practice) was visible at Chuula 1, only Panel 3 had enough to warrant a Harris



*Figure 16 CH01-3-25 outlined in brown. Image processed with DStretch LDS filter.*



matrix (Appendix 3.1) and it was the simplest, with only three identifiable points of superimposition over confirmed motifs.



*Figure 17 Pigment applied over line series petroglyphs CH01-1-6 (top) and CH01-1-7 (bottom) with a lizard motif (CH01-1-8) between. Image processed with DStretch LDS filter.*

## CHUULA 2 MOTIF USAGE, SITE USAGE AND FEATURES

Chuula 2 (Figure 18) shows a rather diverse spread of figurative motifs as the most common type, with humans ( $n=23$ ) and marine turtles/freshwater tortoises ( $n=10$ ) being the most frequent examples. Bird tracks ( $n=16$ ) once again are heavily represented. Also visually prominent are anthropomorphs ( $n=2$ ) of distinct features, and a lack of identifiable female figures when compared to the six figures (five human, one anthropomorph) that were depicted as identifiably male with obvious genitalia. Although Chuula 2 had a diverse spread of motifs, ten of twenty-two identifiable motifs were only shown once. Some colour variation was also visible at Chuula 2, with several motifs being clearly shown in a lighter yellowish brown than the darker red-brown shades that dominate the three sites. Most notable were CH02-2-60 and paint applied to the petroglyph CH02-2-62, as well as CH02-3-117, CH02-3-125 and CH02-3-134.

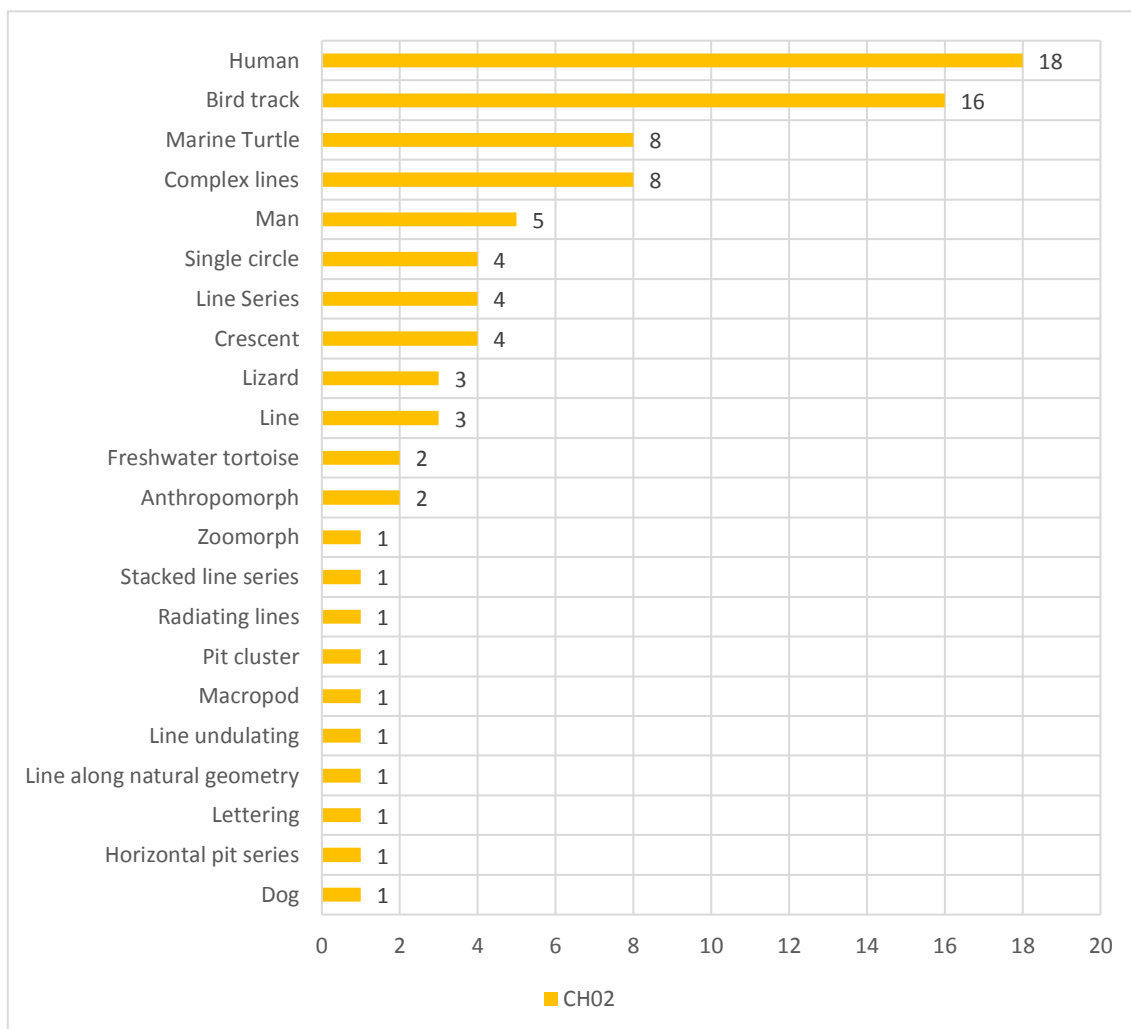


Figure 18 Count of motif types at Chuula 2.

Some of the singular examples of a motif type were visually very prominent within the rock shelter such as the dog (Figure 19), which was placed at the centre of Panel 2 and appears to be associated with the human figure of comparable proportions to the left of it. In a panel that is heavily modified with many pictographs and petroglyphs of varied types, especially humans and geometric shapes, this pair is very much the centre focus of the panel along with the shooting star that appears to their right (Figure 11) and may or may not be associated with them. The dog (species unknown) determines that this motif must be younger than the arrival of Dingo species to Sahul at least 4,500 years ago (Hiscock 2008:148; Walshe 1994) from East Asia (Savolainen et al. 2004).



*Figure 19 A dog (CH02-2-72) and associated man (CH02-2-70). Image processed with the DStretch LDS filter.*

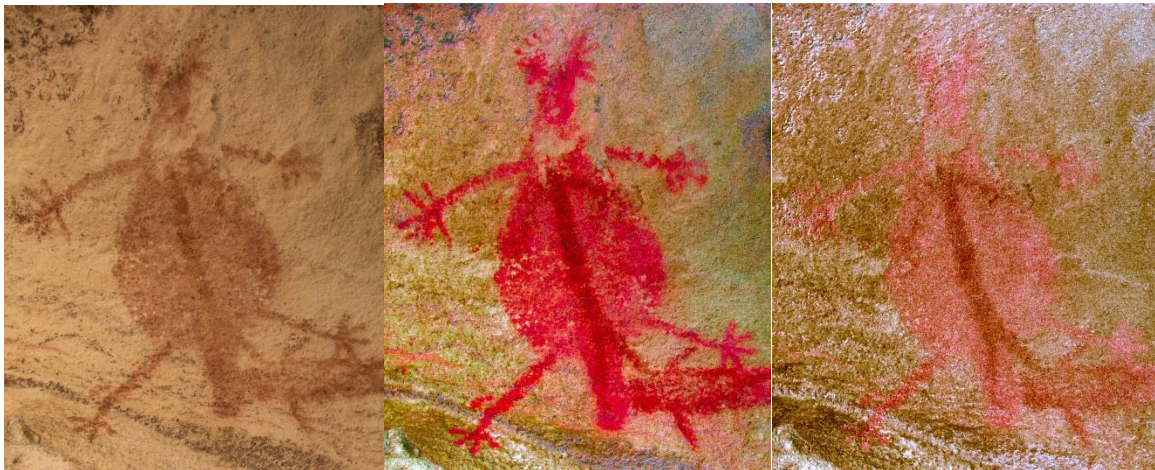
Also prominent at Chuula 2 on the same panel is the large radiating line or star shape to the right of the man and dog (Figure 11). With a long tail extending to the right, the star shape appears to be a shooting star and is another case of reiterative practice, where pigment has been applied to an existing petroglyph to add to the image. The red infill makes the motif stand out from the somewhat weathered background that it cuts across and gives a polychromatic effect. It is not clear, however, whether the application of this paint took place at the same time as the creation of the petroglyph or as an addition made later.

The use of aquatic animals, especially turtles and tortoises is another immediately striking element of Chuula 2. The positioning of five marine turtles and two long-necked tortoises on the naturally distinct concave, smooth and high surface of Panel 1 (Figure 20) suggests a thematic choice of some kind, as few turtles or tortoises are shown outside of this panel. Distinctive features are also present on some of the turtles with radiating lines that appear from the head of CH02-1-50 that may denote action, perhaps eating and two diagonal lines across the shell of CH02-1-47.



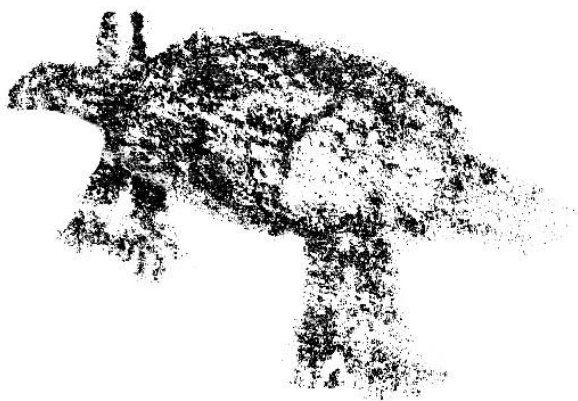
*Figure 20 Site photograph showing the distinctive concave features of Chuula 2 panel 1 as it sits above panel 2. Note also the turtle with diagonal lines across the shell and another with radiating lines from its head (second from the right).*

It is also telling that despite the comparatively high number (=23) of human figures at Chuula 2, no humans are clearly visible panel 1, just an anthropomorph and a zoomorph. In fact, the only human figure (CH02-1-56) on this panel was almost completely hidden behind the creation of CH01-1-52 (Figure 21), only becoming obvious through the application of DStretch filters; it was the only case of near-complete and seemingly deliberate superimposition that was found in this study.

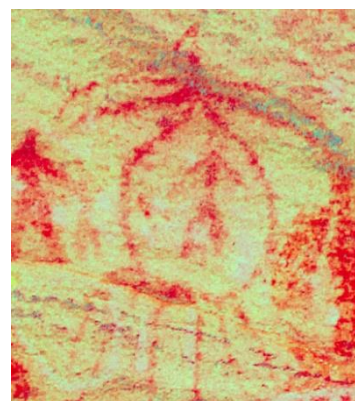


*Figure 21 CH-2-52 (zoomorph) superimposed over CH02-2-56 shown in principal photography (left) and then under DStretch filters LWE (middle) and LYE (right).*

As in Panel 2, humans once again dominate Panel 3, however a macropod on the right side of the panel (Figure 22) is another visually striking feature that has suffered some wear and is likely older than many of the other figures on the panel, although its proximity to the edge of the surface may have exposed it to more destructive taphonomic processes



*Figure 22 Digital tracing of CH02-3-129.*



*Figure 23 Human figure (CH-02-3-123) inside the outline of CH02-3-124. Image processed with DStretch LRE filter.*

than those motifs to its left. Also striking is the human figure inside that of a turtle (Figure 23), which has no parallel anywhere else yet seen in this project.

Across Chuula 2 it is also notable that many of the petroglyphs were extracted from the rock surface *after* most of the pigment art, not vice versa as is often expected in more evolutionary models of rock art development (viz. Maynard 1976). The rather heavily pigment-modified surface on the right-hand side of Panel 2 is intersected with scratched petroglyphs and the larger 'shooting star' motif, whilst on Panel 3, the petroglyphs are also largely later, being either directly superimposed over a pictograph (Figure 24) or obviously post European contact lettering (CH02-3-115). Three Harris Matrices were created for Chuula 2, as the most complicated site showing consistent superimposition of a partial or almost complete nature. Appendices 3.2-3.4 demonstrate the relationship between motifs on each panel, including the use of petroglyphs after the application of pigment.



*Figure 22 Bird track (CH02-3-110) and line series (CH02-3-114) petroglyphs superimposed over pictograph of a human (CH02-3-109).*

### WA'TANCHI MOTIF USAGE, SITE USAGE AND FEATURES

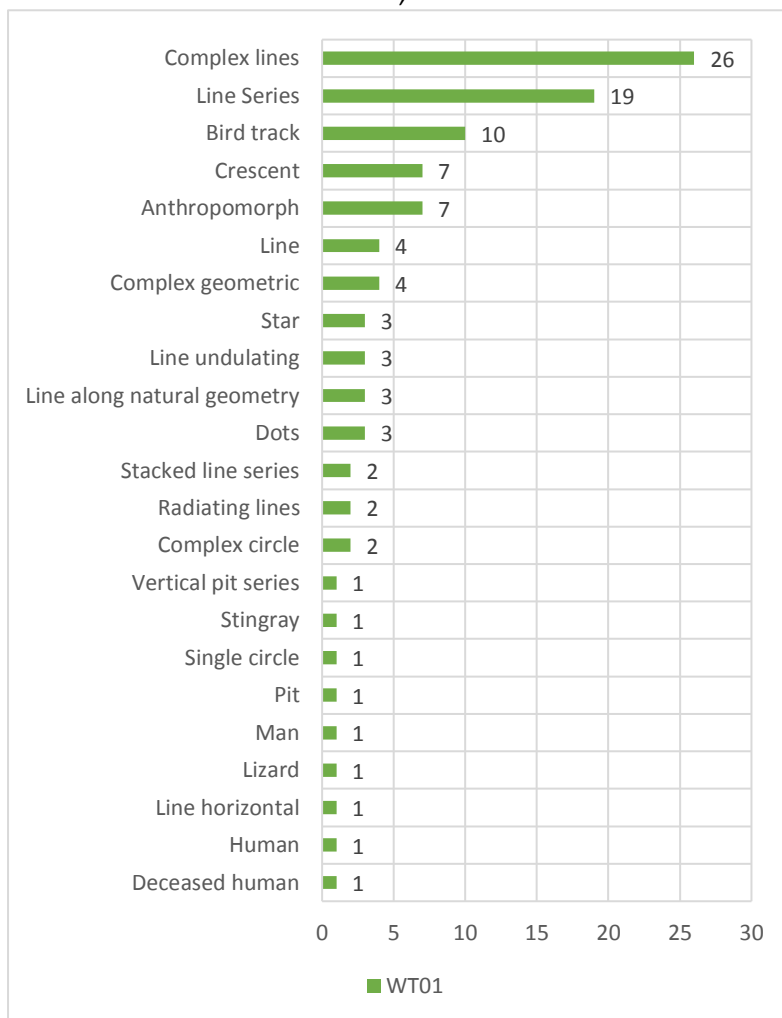


Figure 23 Summary data of motif type distribution at Wa'tanchi.

The motif types represented at Wa'tanchi are predominantly (67%) non-figurative or geometric, with tracks following as the next most common motif category at 8% (Figure 25). Despite this skew towards the non-figurative, the large number of motifs at the site ( $n=123$ ), allows for an interesting array of types to be represented. Complex lines were the most common

motif ( $n=26$ ), which resembles the trend at Chuula 2 more than Chuula 1. Following this was bird tracks, once again being the only track type to appear in the study area. Unlike Chuula 1 (which was also dominated by non-figurative motifs), Wa'tanchi is overwhelmingly a pictograph site with 9% petroglyphs and 91% pictographs (Table 5). This is the opposite of what might be expected of a largely non-figurative sample, as Chuula 1 demonstrated a much larger proportion of petroglyphs at 53%.

A new motif type at Wa'tanchi is the complex geometric, which was a combination of lines and dots in what appears as a single painting event (Figure 26). These motifs were



*Figure 24 Complex figurative (WT01-4-235). Photograph shown through DStretch YRD filter.*

all different in appearance and indicate a break away from the much simpler motif forms in the non-figurative classes than those at Chuula 1 and Chuula 2. Repeated and clustered use of dots is not common in the KIRAP study and are not present in such large clusters as in Figure 26 in the Chuula sites. It was judged a single painting event at the time of classification based upon a lack of differential weathering.

Also unique to Wa'tanchi is the presence of a single deceased human, shown horizontally with lines passing through the abdomen, potentially depicting a spearing (Figure 27), although it should be noted that these lines are rather short for a depiction of a spear. They may be loosely representative or depict another weapon, but the piercing of the



*Figure 25 Deceased human (WT01-4-234). DStretch CRGB filter applied.*



body seems to be a clear iconographic choice. It is the only human figure in the three sites that is depicted horizontally, all others are oriented generally vertically with the head pointing upwards and feet pointing downwards. Spearing is well documented in Australian rock art (e.g. Walsh and Morwood 1999) and may indicate a magical or 'spell' element to



*Figure 26 WT01-1a-172. Potential flora motif.*

the usage of this particular site (McNiven and Russell 2002). A further unique motif was not formally identified, however it appeared very much botanical in nature and may have been a depiction of flora (Figure 28).

The appearance of a grouping of complex line, crescent and pit (total  $n=11$ ) petroglyphs (Figure 29) was of particular interest at Wa'tanchi for several reasons. Firstly their appearance was far more worn than other petroglyphs in the study area excepting one example at Chuula 1 (CH01-3-20), being worn to the point of contrast state 1 (the oldest



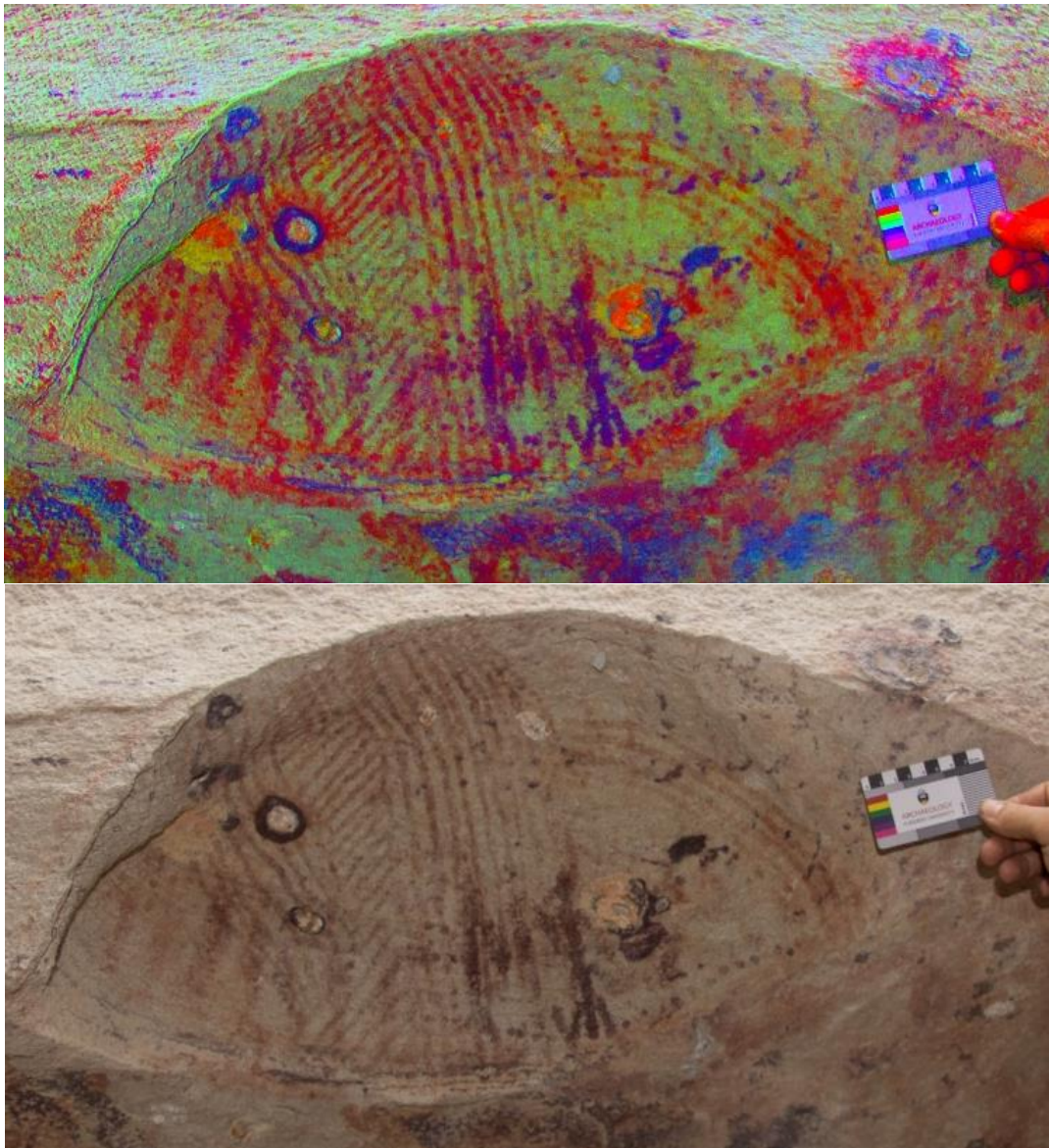
*Figure 27 Petroglyphs near the rock shelter floor in Wa'tanchi (Panel 4).*

designation). These motifs all appear on the same section of panel 4, very close to the ground. The fact that only one of the five panels at Wa'tanchi show petroglyphs once again indicates that specific choices are being made in the usage patterns at this site. Further the fact that these petroglyphs are among the most worn in the KIRAP study area may indicate that they are of considerable antiquity, however the aforementioned position of relative vulnerability to taphonomic processes so near to the floor of the shelter (Morrison 2015:53) may have worn these petroglyphs faster than those in more protected positions at Chuula 1 and Chuula 2. Morrison also noted that their proximity to the rock shelter floor may indicate further examples lie underneath deposits (pers. comm.). These could have been protected over time and give more reliable comparative data for dating.

Site usage at Wa'tanchi is of interest as across the rather large rock shelter there is a total of five identified panels, one of which (Panel 1) was divided into a, b and c. Most of these panels hold a few motifs (Panel five holds just two), without the dense clustering in a clearly recursive use pattern that can be seen in Chuula, especially in Chuula 2 Panel 2. Rather, the use of surfaces is generally more spread at Wa'tanchi and thus superimposition is generally less common than at Chuula, bar a few exceptions. Panel 1a was the only panel at Wa'tanchi that warranted the creation of a Harris Matrix (Appendix 3.5) and demonstrates intensive usage of a small space. The top of the panel has a concave niche (Figure 30) that is heavily modified with pictographs that are in three identifiable 'phases' of decoration. The first is the four anthropomorphic figures that are hardly visible on the left side of the niche. Then the cross-hatched lines were created and lastly the darker figures and dots (dark blue/purple in Figure 30 top) on the bottom-right corner. Significant wear and fading has occurred in this niche, however those three phases are clear, and at least

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two different pigment sources are clear, being the red/brown of the first two phases and the dark brown of the third.



*Figure 28 Niche in Panel 1a shown without filter (below) and with DStretch YBR filter (above).*

## CHAPTER SIX: DISCUSSION

The results of the formal analysis into the three identified sites in the KIRAP study area indicate that the creation of rock art for the Northern Kaanju was a long-term practice, with diverse concerns and techniques that likely reflect different elements of their world-view, system of governance and general interactions with their cultural landscape, Payamu. Each of these sites exhibits different techniques, material choices, subject matters and interactions with older phases of expression that support the interpretation of them as sites of distinct significance and purpose from one another. The consistency of colour within the three sites, with very little variation indicates that the source of pigments was localised (especially the darker brown hue at Wa'tanchi), that there may well have been a preference of colour for different locations and site types (but at this stage it does not appear that content had an influence in colour choice), and that trade in ochre from other environments was not something that occurred with any regularity for the Northern Kaanju rock artists.

### LIMITATIONS

As a project that was reliant upon digital datasets that had been established prior to the commencement of this thesis, there were some limitations in the usefulness of the 3D modelling software that had been utilised between 2015-2017. Despite exhaustive photography and strong methodology, the realities of achieving the photographic record required for 3D modelling of all three sites in a limited time frame and in a remote field location meant that the 3D models generated in Agisoft PhotoScan had some errors and could not always be completely stitched together (at this stage no complete model of Wa'tanchi has been generated). This meant that much of the analysis was forced to rely on high-resolution photographs for detail, and the models for context. In retrospect access to a

LIDAR scanner may have produced better results for analysis, however, the issues of costs associated with such technology persist.

It must also be noted that as an early study into rock art traditions in this region of the Cape York Peninsula, these sites may not be entirely representative of the broader traditions in the area. Limited data means that new work may indeed find rather disparate results, however the need for an early analysis is not negated by this fact. Rather, the findings here are suggestions that are perhaps likely to change in the future.

#### RELATIVE AGE OF SITES

At this stage, without the ability to use direct dating techniques and prior to excavation of any rock shelter deposits, it is difficult to make any determinations on age apart from general inferences from the condition of rock art in these three shelters. Considering intensity of use, wear and blurring of pictographs and contrast states, it is likely that Wa'tanchi and Chuula 1 came into use prior to Chuula 2 as they have petroglyphs classed as more worn (contrast states 1-2). Conversely, Chuula 2 has the only examples of more recent petroglyphs (contrast state 5) and was potentially in use last of the three sites. Perhaps this goes some way to explain the differential subject matter between Chuula 2 and Wa'Tanchi/Chuula 1 (Figure 13), a question that will hopefully be tested in future excavations and with scientific dating techniques. The (judging from contrast state) latter petroglyphs at Chuula 2 were mostly executed in a more shallow, incisional method over the top of existing pictographs than the earliest petroglyphs at Chuula 1 and Wa'tanchi that were abraded, appearing broader and deeper – the latter would have been more labour intensive. Although the technique changes over time, the practice of creating petroglyphs appears to have been active over the long term, right up until the colonial era. The lack of

post contact material excepting the graffiti from a European carving their initials 'R.K.A', likely someone coming across the site from the nearby goldfields, suggests that once contact had occurred in a significant way, rock art expression may have ceased at these three sites.

This cessation may be due to changes in land use patterns as the Indigenous population moved further into the highlands during the colonial period. Certainly access to these sites became increasingly difficult for the Northern Kaanju as the proximity of the nearby goldfields, stations and telegraph stations facilitated the removal and murder of Kaanju people coupled with increasing pressure to rely on handouts of beef and other foodstuffs in exchange for peaceful interaction and prevention of theft changing the way the Kaanju interacted with the country around them (Morrison et al. 2018). This increasing pressure from colonial presence may have also caused a reduction in the ability to pass on cultural knowledge to younger generations. Potentially due to this diminishing access, the fresher petroglyphs in a different technique suggest that less time-consuming practices were being employed in the later stages of site usage at Chuula 2, as quick expressions in areas that would be easily highly visible (on top of high use areas with pigment that would contrast strongly with new petroglyphs).

It is likely that Wa'tanchi is the earliest of the three sites to come into use, and there is evidence of significant time depth at this location. The curvilinear engravings on Panel 4 at Wa'tanchi appear at this stage to be the oldest of the identified motifs in the KIRAP. They are unique to the study and appear to belong to an earlier tradition of engraving for the Northern Kaanju. The early survey of the Wa'tanchi rock shelter indicated cultural deposits (Morrison 2015:45) with clear stratigraphy and visible artefacts where the shelter floor

slopes away and has broken at the creek edge. This coupled with the position of the boulder that has come away from the shelter wall at Panel 2 on top of these deposits, and the rock art applied to Panel 2 *after* the collapse of this boulder all imply that this shelter has seen several use periods and significant use intensity over a long expanse of time. The depth of this rock shelter is also superior for the general protection of pigment art, which may mean that pigment has survived in this shelter that is much older than that of Chuula examples, which are more exposed.

#### SITE USAGE PATTERNS

The intensity of site usage is also varied across the three sites, with Chuula 1 appearing to have been used the least of the three sites, despite contrast state indicating that its petroglyphs are older than those at Chuula 2. Although a smaller site, the density of motifs at Chuula 1 is far less than Chuula 2, indicating that this site was perhaps used less frequently for rock art in its lifetime. This may be due to site usage being for certain occasions, or it may have just been more of an occupational site than one which encouraged frequent rock art expression. This site is more suitable for occupation than Chuula 2, with a larger sheltered area of 30m<sup>2</sup> and good shade after midday. It also yielded more regular artefacts in the initial survey than Chuula 2. That being said, the location of this shelter may have made use of it more difficult as although it is only approximately 50m east of Chuula 2, it is a rather steep climb up the escarpment, thus further from fresh water sources and more difficult to access. This is potentially advantageous if access to this site was for a singular purpose or was restricted in some way. Chuula 1 also features somewhat restricted thematic concerns, being mostly non-figurative in nature with only one animal shown. There is little superimposition in the site, although the application of paint in a reiterative practice

over petroglyphs suggest that some of these motifs (especially line series) remained significant over a long period and were something to maintain and respect. The combination of limited site usage (from a rock art perspective) and limited thematic concerns suggests that this place held long term significance and usefulness and may have been a site of ritual activities – that is traditional, repetitive actions to serve a spiritual purpose such as attempting to enact change or continuity in the cultural landscape – of a limited or specific function.

Chuula 2 was a site of intensive usage, with repetitive superimposition that likely obliterated many older pigment motifs or replaced them when they were worn away. It is interesting to note that the superimposition of Panel 1 was minimal, although access and its position being protected from the elements may well be a factor in this. The broad thematic concerns at Chuula 2 and the superimposition being on an easily accessed panel indicates that this site was potentially used for a variety of purposes, held significances of many different kinds and was in use for an extended period, perhaps by many people. It is possible that this site had some relationship to Kaanju resource exploitation, especially food, as the presence of several animal species such as turtles, tortoises, lizards and macropods are known food sources in Kuuku l'yu Ngaachi. The dog on Panel 2 so close to a proportionate human figure may also indicate their place in assisting in food acquisition and as companion animals to the Kaanju. Of course this dog also indicates that this particular motif must have been made after the arrival of the dingo in Australia some 4,500 years BP (Hiscock 2008:148; Walshe 1994). The obviously different style between Panel 1 and Panel 2 also indicate that disparate approaches to rock art may occur at a single site, even in close proximity. The contrast between the highly reiterative painting and extractive practices on Panel 2 and the exclusively paint with minimal superimposition on Panel 1 perhaps indicates



that allocation of space and themes within a singular rock shelter was somewhat controlled, becoming tradition in that location.

At Chuula 2 it is also interesting that the explicit choice was made to show two different species – the freshwater tortoise and the marine turtle, which would have come from very different sources. The Harris Matrix (Appendix 3.1) and differentiation in pigment colour also indicates that these were executed in various stages over some time, and thus they were significant over a period and more than once. Further, the use of the concave portion of the rock shelter wall isolates them from Panel 2 and almost makes it appear as though they are in a waterway. While this may not have been the purpose of that choice in execution, a deliberate choice has come into play in the depiction of these turtles and their relationship to the substrate. While the freshwater tortoise would have been available within Kuuku l'yu Ngaachi, the marine turtles must have come from a coastal resource and may indicate either a relationship with a coastal clan group for access to the coast for hunting these turtles, or an exchange arrangement for them. Access to country of other clan or language groups indicates significant long-term co-operative arrangements that are based in the establishment of social and cultural boundaries and etiquette of interaction. This could have followed the boxing up model of interaction noted by Chase (1980:247), which is likely based on marriage alliances between the eastern coastal groups and the inland Northern Kaanju (Chase 1980:160-161). Thus there was likely often a familial connection and it is not uncommon amongst the Kaanju and their neighbours for people to spend significant amounts of time in their mother's country, or even to settle there for various reasons (Chase 1980:160-161), which would open exchange networks between the Northern Kaanju and their eastern coastal neighbours. These motifs clearly indicate social connectivity between the Northern Kaanju and their eastern coastal neighbours. It is

plausible that Chuula 2 was a heavily used site for various purposes, however its small size and lack of shelter makes it somewhat unsuitable for occupation. Whatever its use, Chuula 2 had a strong tradition of rock art as part of its general purpose, and perhaps that *was* its main use. The consistent superimposition in a low area of Panel 2 may indicate that this is a place where rock art techniques were passed down to younger generations, or where people were free to engage in rock art practices in a more relaxed manner than at Chuula 1.

At Wa'tanchi superimposition was minimal excepting Panel 1a, although intensity of site usage was high, with the highest number of motifs. That may be explained by the long period of use at this location, however. The superimposition of Panel 1a (Appendix 3.5) is markedly different to that in any example at Chuula, with at least three phases taking place, and none of them completely covering any earlier motifs, rather they add to the panel and form a complex series of images that appear to be somewhat related. Although they do not look alike, the complexity of this panel is reminiscent of the complex geometric motifs that appear only at Wa'tanchi, that mix clustered dot patterns with linear non-figurative motifs into a singular painting event.

It is therefore clear that the iconographic trends at Wa'tanchi are significantly different to those at the Chuula sites, as the complex geometric appears only at Wa'tanchi, and the complex line petroglyphs on Panel 4 are also unique to this site so far, while the only deceased human is shown here, as well as some unidentified motifs that have no similarities at Chuula. Being in a different clan estate to Chuula may explain this phenomenon in part, as although Wa'tanchi is also part of Kuuku I'yu Ngaachi, iconographic modes of expression and identity marking could well be varied across different clan groups. The age of Wa'tanchi may also explain its difference. If it is indeed as old as the petroglyphs

on Panel 4 suggest, it may well have come into use before both Chuula sites and thus be representative of a longer use phase or represent a period of cultural expression that is not seen at Chuula.

The use of sorcery in rock art is well documented across Australia (Chaloupka 1993:207; McNiven and Russell 2002:34-35; Mulvaney 1992), including in the CYP region (Trezise 1971:19) and the deceased human at Wa'tanchi, whose body is intersected with four long lines, which is interpreted here as a spearing is potentially an invocation of sorcery against another person. Sorcery in rock art is connected to place marking and attempting to change the natural world through depicting what a person wants to come to pass (McNiven and Russell 2002). This rock art is not about 'recording' what has been seen or for simple aesthetic expression, it is an active practice of interaction and exchange of influence with the cultural landscape.

The proximity of Wa'tanchi to a creek and seasonal waterfall, along with its much larger protected shelter area makes this site a good candidate for occupation, perhaps even during seasons when groups would camp for long periods in somewhat crowded conditions (Chase 1980:156). This agrees with the preliminary findings of deposits that have been revealed by a cross section where the shelter floor has been eroded by the creek edge, which indicate that occupation has occurred here over multiple phases and a significant amount of time (Morrison 2015:45). An extended period of use may explain the variety of motifs found at Wa'tanchi and could indicate developing traditions over time. Also if Wa'tanchi and Chuula 1 are both occupational sites, while Chuula 2 was not it indicates that

occupational sites, although varying in intensity of site usage, do not demonstrate as much repetitive superimposition, as opposed to reiterative touching up of motifs.

It may be stated that although rock art is an integral part of occupation sites for the Kaanju, it is generally practiced with minimal erasure of prior motifs by the application of new pigment, or extraction of rock in the creation of new motifs. It might also be said that non-figurative motifs are more common in occupational sites, with both Chuula 1 and Wa'tanchi demonstrating a far higher proportion on non-figurative motifs than Chuula 2. This has implications in our understanding of the Kaanju interactions with Payamu, and how cultural expression and marking of places varies in different contexts on country. It is the expressions that are somewhat ritualistic, these repetitive actions based on traditional practices that suggest the concerns that the Northern Kaanju most frequently had in these areas and potentially the changes and influences over the cultural landscape that they wanted to initiate, as well as the varied identities that these places were given through the identity marking practices themselves (McNiven and Russell 2002; Wiessner 1989).

#### REGIONAL VARIABILITY ACROSS THE CYP

How this relates to wider regional variability is also indicative of differing cultural concerns and interactions with the cultural landscape. Figures 29 and 30 show the spread of figurative, non-figurative and track motifs in Kuuku l'yu Ngaachi in comparison to the main sites identified by David and Chant (1995) in their regionalisation study into the south east CYP region. David and Chant generally identified two key traditions, north of the Mitchell and Walsh rivers, where figurative motifs dominate, and south of those rivers, where non-figurative motifs are most common. This division is most clear in the pictographs of the CYP

data (Figure 29), as petroglyphs are dominated by non-figurative motifs in general (Figure 30).

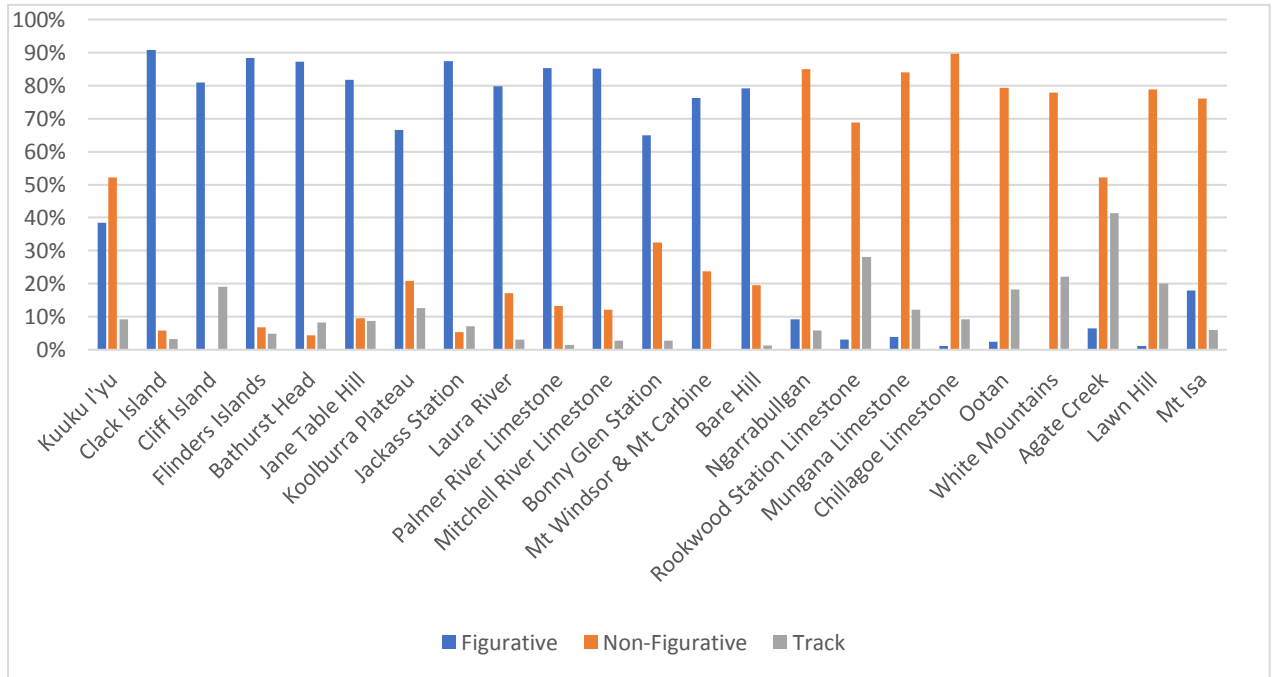


Figure 29 KIRAP motif category percentage data compared to the south east CYP for pictographs. Comparative data extracted from David and Chant (1995: Table 87). Note: Non-diagnostic pictographs have been removed from the Kuuku I'yu total for comparison.

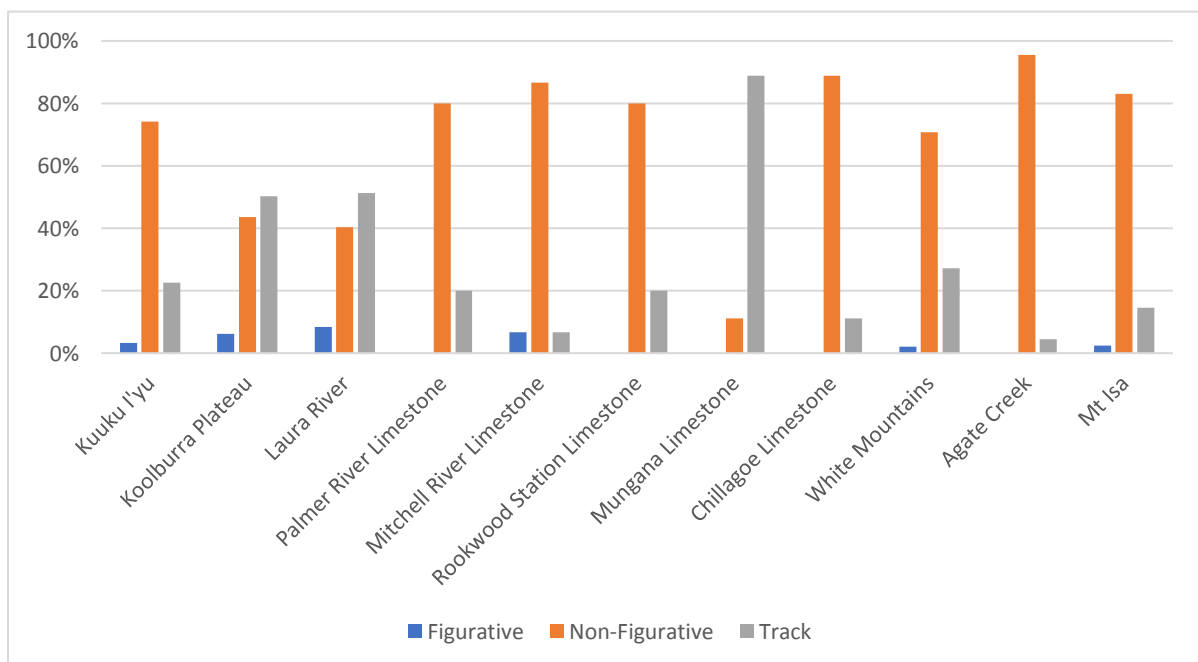


Figure 30 KIRAP motif category percentage data compared to the south east CYP for petroglyphs. Comparative data drawn from David and Chant (1995: Table 85).

It is clear from Figure 29 that the Kuuku l'yu rock art does not fit into either of David and Chant's (1995) two basic cultural groups, being far more evenly distributed than any other site in the 1995 study. As sites in Figure 29 are organised roughly north to south (left to right) the shift from the northern to the southern groups is immediately obvious between Bonny Glen Station and Ngarrabullgan. The direct comparison of data from Northern Kaanju rock art, to the studies done in the south eastern part of the Peninsula indicate that a third cultural group is potentially represented here, which has a more even distribution of figurative and non-figurative rock art, with a potential high degree of variability even on the local scale. Indeed the complex social arrangements identified in early ethnographic work, along with the density of diverse language and clan groups in the area (Chase 1980:83-86; Sutton 1978:31-43) indicates a particularly 'closed' region of social interaction, which, following Yengoyan (1976), has potential implications of high variability between clan groups. This follows generally the explanation that David and Chant (1995:507-512) and David and Cole (1990) put forward for the increased variability of the northern group in their study in terms of figurative trends. Kuuku l'yu rock art indicates that this continues further north up the Peninsula, although what that variability looks like on a larger scale is yet to be seen. There is no singular motif that seems to encapsulate Kuuku l'yu rock art as David and Chant highlighted in their study (1995:502, Figure 113; see also David and Cole 1990), however the rather small sample size of 261 motifs across three sites may be the reason for that. There is great potential that far more rock art sites exist in this part of the Peninsula, and if more survey and analysis is completed, a picture of the quintessential Kuuku l'yu motif may become clear.

## CHAPTER SEVEN: CONCLUSION

Through a formal analysis of Northern Kaanju rock art that has been recently rediscovered within Kuuku I'yu Ngaachi, within the clan estates of Chuula and Wa'tanchi, it has been demonstrated that Kuuku I'yu rock art forms part of a culture of visual expression that is at this point seemingly unique to the Northern Kaanju. Although there are definite similarities in motif types to rock art of the broader Cape York Peninsula region, the Kuuku I'yu assemblage reflects the intimate relationship that the Indigenous people of Kuuku I'yu Ngaachi formed with their cultural landscape, Payamu.

Based on the data available at this time, the main features of the Kuuku I'yu rock art are the rather even (in comparison to other recorded CYP sites) distribution between pictograph figurative and non-figurative motif types, repetitive use of certain motifs such as line series, complex lines and human/anthropomorph figures, exclusive use of bird tracks with no other tracks being shown and depictions of tortoises and turtles. A further feature is the high variability in motif usage between sites that are relatively close to one another, indicating that the relationship between the Northern Kaanju and a specific place have a clear influence on the cultural interactions such as place marking that occur there. A variety of techniques were used including varied extractive methods and mostly infilled and outline pigment techniques. The extraction of petroglyphs from existing pictographs was also a key feature of Kuuku I'yu rock art, and indicated a dynamic relationship between old and new expressions in rock art.

At this early stage in the analysis, the relationship to the wider CYP regional traditions is one of potentially a third tradition that is not encapsulated in either of David and Chant's (1995) northern or southern groups. This points to the episodic and mosaic-like

patterning of complex artistic traditions that was identified by McDonald and Veth (2010:3) as developing from the Pleistocene and shows that the entire CYP is likely far more varied and complex than the data available to David and Chant suggested. An entire northern swathe of the Peninsula is available for study and it is highly likely that the results of future research will expand their original model, and perhaps clarify on a larger scale what the key features of traditions in the northern part of the peninsula are.

The Kuuku I'yu rock art at these three sites demonstrates the rich and complex relationship between the Northern Kaanju and Payamu was in place right up until the mass displacement of people and expropriation of traditional lands in the colonial period. It demonstrates that place marking, territoriality, systems of exchange of goods between clan and language groups and traditional models of resource exploitation were indeed in place as the Northern Kaanju have always said. Such validation of traditional lifeways and connection to country are by no means necessary to establish but they hopefully serve to further strengthen the ties that the current Kaanju population has with Payamu, as it informs and fleshes out what the nature of that relationship was in certain specific places and in a specific manner of cultural expression.

## FUTURE RESEARCH

There is potential for dating of some pigment underneath wasp nests, as well as excavation of rock shelter floors at Chuula 1 and Wa'tanchi that may give a clearer indication of timelines and the length of site usage in the future. It is clear that there is local variability in iconographic trends between sites and clan estates, and thus this area of rock art research is likely to yield complex and informative results in the future. A comprehensive survey and study of scarred trees and existing ethnographic material in museums would also



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likely yield excellent results in elucidating the features of Kuuku I'yu material culture and its place within the Northern Kaanju Payamu.

It is also highly likely that further rock art exists in the clan estates adjacent to these rock art sites, and in the country of nearby clan groups such as the Munkan, Wik and Kuuku Y'ao, which may change our understanding of the traditions in the region. Whether this dataset is truly representative of the region is something that would need to be confirmed through survey of these areas. If more rock art surveys were undertaken in the CYP region, a clearer picture of the interactions between Indigenous Australians and their cultural landscape in northern Queensland would likely quickly take shape. This could also inform the nature of social and cultural exchange and interaction between different clan groups in the region and give inform about the histories of those communities.

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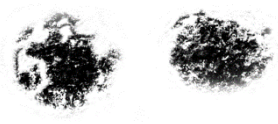
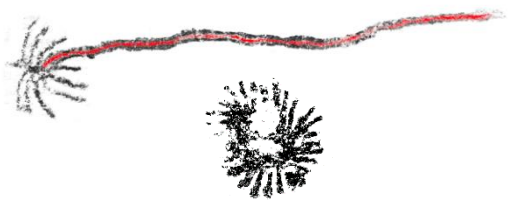


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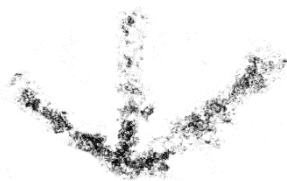
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## APPENDIX 1

<b>FIGURATIVE</b>	
<b>HUMANS</b>	
Human	Simple human shape, sex undetermined.
Man 	Identifiable by either dress or genitalia as male
Deceased Human 	Indicators of death include horizontal positioning and presence of weapons apparently used on/against the person.
Anthropomorph 	a vaguely humanoid shape that is not a simple rendering of a human. May have mythic or mixed animal features
<b>ANIMALS</b>	
Dog 	General identification of canine, specific breeds, whether pre or post English arrival not differentiated in this study.
Freshwater Tortoise 	Differentiated from marine turtle by the long neck and limbs. In this sample the tortoise also often has an infilled shell, whereas the marine turtles are shown in outline only.
Lizard 	Individual species not identified in this study. Identified by short legs, birds-eye view representation and long, thick tails.

Macropod		Includes various species of macropod. No further designations were needed or possible in this study.
Marine Turtle		Different to the tortoise in the absence of the elongated neck, and the shorter, broader flipper-style legs. Shell details may be added, as well as eyes.
Stingray		Specific species not identified in this study. Identifiable by roughly diamond shaped body and following tail.
Zoomorph		a vaguely animal shape that is not a simple rendering of any known species. May have mythic or mixed animal/human features.
<b>POST CONTACT FIGURATIVE</b>		
Lettering		English or Latin origin lettering
<b>NON-FIGURATIVE (GEOMETRIC)</b>		
Complex circle		Simple circles with added internal detail such as dot fill, bisecting lines, concentric circles, and spirals. Follows Franklin (2004:190).
Complex Geometric		Motifs that have multiple geometric features such as a mix of complex lines and dot clusters that appear to be a homogenous composition (Morwood 1979:272) or associated.
Complex Lines		Groupings of lines that may intersect in various ways, including Morwood's 'rake,' grid, tree and ladder groups (1979:table 7:3). Differentiated from mazes as being simpler, and from radiating lines/stars by their lack of central meeting point and radiating nature. Follows most closely

		Franklin's (2004:190) complex lines definition.
Crescent		Crescents may be simple or complex with internal fill such as vertical lines, or appendages (Franklin 2004:190). Crescents may also be nested in groups.
Dots		Refers to basic repetitive circular pigment shapes. May be in a vertical/horizontal series or even clusters. Singular dots are referred to as simple circles.
Line (horizontal, vertical, undulating, following natural geometry of the rock)		A singular independent line that appears to not be associated with another. The line may go in any direction, and may also follow along fissures, breaks in the rock or other natural features.
Line Series		Line series are groupings of lines, whether vertical or horizontal, all placed parallel or nearly parallel to each other. Line series may be horizontal or vertical. They may be stacked horizontal groups or likewise stacked vertical groups.
Pit		Refers to generally circular petroglyph shapes. Can be singular, in a cluster or vertical/horizontal series.
Radiating Lines		Defined after Rosenfeld (1981:54) as 'patterns of lines or bands which converge on to a broadly defined point or zone; they are generally rather asymmetrical.' This is taken to include those that are made up of curving lines, and those that have obvious variation in the length of the lines, (see Franklin 2004:190).
Single circle		A singular pigment circle with no detail (but may be outline or solid).
Star		Stars are defined after Rosenfeld (1981:54) as 'radiating designs in which the rays are of approximately equal lengths and converge to a point; stars are not necessarily symmetrical.'
Tool sharpening		Likely a result of a repetitive rubbing or engraving action to sharpen a tool, rather than a deliberate creation of a motif. May

	become a significant motif or be incorporated/expanded upon later.
<b>TRACKS</b>	
Bird track 	Generally made up of a central line and two lines either side that all meet at a central point or the base of the claw. May be singular or in a series/pair. Bird tracks may face 'upward' with the three lines running up the wall from the base or 'downwards' or sideways. Bird tracks may also have a dot or pit at the bottom, may have an elongated central line that extends past the base of the claw. The lines may also be curved and/or joined end to end or back to back.

## APPENDIX 2

Motif ID	General Technique	Specific Technique	Colour	Motif Category	Motif Class	Motif Type	Notes or comments	Contrast state
CH01-1-1	Petroglyph	Indeterminate	Not applicable	Non-Figurative	Geometric	Line Series	15 parallel lines, vertical	3
CH01-1-2	Petroglyph	Indeterminate	Not applicable	Non-Figurative	Geometric	Horizontal pit series	2 pits	3
CH01-1-3	Petroglyph	Indeterminate	Brown	Non-Figurative	Geometric	Line Series	paint applied	2
CH01-1-4	Petroglyph	Indeterminate	Not applicable	Non-Figurative	Geometric	Line Series	22 parallel lines, vertical. Mostly regular length but 3-5 are much longer than others	3
CH01-1-5	Pictograph	Infilled or solid	Red	Non-Diagnostic	non-diagnostic	Non-diagnostic	Smudge of pigment, shape unknown	
CH01-1-6	Petroglyph	Indeterminate	Red	Non-Figurative	Geometric	Line Series	Some pigment applied over and rubbed into petroglyph. Sits above CH01-1-8. 15 parallel lines, vertical. Some portions of motif missing	2
CH01-1-7	Petroglyph	Indeterminate	Not applicable	Non-Figurative	Geometric	Line Series	Below CH01-1-8. Approx 22 parallel lines, vertical.	3
CH01-1-8	Pictograph	Infilled or solid	Red	Figurative	Animal	Lizard	Head, tail, 4 distinct appendages visible.	
CH01-1-9	Petroglyph	Indeterminate	Red	Non-Figurative	Geometric	Line Series	Sits under CH01-1-8. Quite faint engraved parallel line series, those towards the right have pigment applied (only visible under dstretch)	2
CH01-1-10	Petroglyph	Indeterminate	Not applicable	Non-Figurative	Geometric	Crescent	Open crescent engraved but very faint. C shaped	2

CH01-1-11	Petroglyph	Indeterminate	Not applicable	Non-Figurative	Geometric	Line Series	Long line series. Almost obliterated, only noticed after DStretch filter applied	2
CH01-1-12	Petroglyph	Indeterminate	Not applicable	Non-Figurative	Geometric	Crescent	2-3 inverted crescents nested together	3
CH01-1-13	Petroglyph	Indeterminate	Not applicable	Non-Figurative	Geometric	Non-diagnostic	circle or arch around exterior of heavily modified interior. One vertical line on interior. combination of weathering and anthropogenic modification.	3
CH01-2-14	Pictograph	Outline	Red	Track	Tracks	Bird track	inverted trident or extended bird superimposed over older red pigment art. Latter pigment extends across a larger area	
CH01-2-15	Pictograph	Outline	Red	Non-Figurative	Geometric	Crescent	Crescent, open end facing downwards	
CH01-2-16	Pictograph	Outline	Red	Track	Tracks	Bird track	Single but very faded downward pointing bird track. May be part of series with CH01-2-14 and ...-17	
CH01-2-17	Pictograph	Outline	Red	Track	Tracks	Bird track	As per CH01-2-16, above. More distinct.	
CH01-2-18	Pictograph	Outline	Red	Non-Figurative	Geometric	Single circle	Large circle 30cm diam with minimum of two protruding lines perpendicular to circle outline at bottom. Some pigment applied inside, but likely to be	

							superimposition. Associated with a faint single line immediately below circle.	
CH01-2-19	Pictograph	Outline	Red	Figurative	non-diagnostic	Non-diagnostic	May be a lizard or human form from model but not clear enough to classify	
CH01-3-20	Petroglyph	Engraved	Red	Non-Figurative	Geometric	Tool sharpening	May be evidence of spear grinding due to shape of lines. Red pigment bordering group of lines and filled in	1
CH01-3-21	Pictograph	Outline	Red	Non-Figurative	Geometric	Line along natural geometry	Solid red line along natural ridge on shelter surface. Near base of panel	
CH01-3-22	Pictograph	Infilled or solid	Brown	Non-Figurative	Geometric	Line Series	Two brown vertical lines. May be associated with CH01-2-20	
CH01-3-23	Pictograph	Outline	Brown	Non-Figurative	Geometric	Line along natural geometry	Solid brown line following natural depression along bottom of panel 3	
CH01-3-24	Pictograph	Infilled or solid	Red	Non-Figurative	Geometric	Line Series	Three vertical painted lines. The right-hand line is slightly apart from the other two	
CH01-3-25	Petroglyph	Pecked	Red	Non-Figurative	Geometric	Horizontal pit series	Two small pits with red pigment around margins	3
CH01-3-26	Petroglyph	Pecked	Not applicable	Track	Tracks	Bird track	Single line with upturned V at base (pointing up).	2
CH01-3-27	Pictograph	Outline	Red	Non-Diagnostic	non-diagnostic	Non-diagnostic	Generally amorphous area of badly eroded red pigment.	
CH01-3-28	Pictograph	Outline	Red	Non-Figurative	Geometric	Line horizontal	Single line along base of CH01-3-27	



CH01-3-29	Petroglyph	Pecked	Not applicable	Track	Tracks	Bird track	Faint bird track, 3 short lines radiating from central point. One additional line radiating from below these	2
CH01-3-30	Petroglyph	Pecked	Not applicable	Track	Tracks	Bird track	Possible bird track. Elongated 'toes'. Pecked dot at base.	3
CH01-3-31	Pictograph	Outline	Red	Non-Figurative	Geometric	Crescent	Crescent with ends pointing downwards. Superimposed over 029	
CH01-3-32	Petroglyph	Pecked	Not applicable	Non-Figurative	Geometric	Line Series	Up to 5 short vertical lines, parallel, but very indistinct	2
CH01-3-33	Petroglyph	Pecked	Not applicable	Non-Figurative	Geometric	Complex lines	Long horizontal line with some bisecting vertical lines. Some pigment has been added on border and filling in on left hand side	2
CH01-3-34	Pictograph	Infilled or solid	Red	Non-Figurative	Geometric	Line Series	three red vertical lines with the left slightly apart from the other two.	
CH01-3-35	Petroglyph	Outline	Red	Non-Figurative	Geometric	Complex lines	Possibly one large line series affected differentially by weathering, so classified as complex lines. Combination of vertical and horizontal lines. Underlying pecked lines that have been painted in later. Bottom layer of pecked line series has no pigment evident.	2

CH01-3-36	Petroglyph	Pecked	Not applicable	Non-Figurative	Geometric	Pit	Single pit associated with pigment (CH01-3-38). Seems to be superimposed over the pigment	3
CH01-3-37	Pictograph	Outline	Brown	Non-Figurative	Geometric	Line along natural geometry	Horizontal line seeming to conform to a natural line in the rock surface. Occurs beneath 036	
CH01-3-38	Pictograph	Indeterminate	Red	Non-Diagnostic	non-diagnostic	Non-diagnostic	Red pigment, badly eroded. Partially obliterated by creation of CH01-3-36	
CH02-1-39	Pictograph	Outline	Brown	Figurative	Anthropomorph	Anthropomorph	Brown pigment stick figure with rounded midsection detailed with vertical lines.	
CH02-1-40	Pictograph	Outline	Red	Figurative	Animal	Marine Turtle	Large outline in brown-red, shaped like turtle with head, tail, 4 legs. No internal details. Lower left of panel superimposed with other motifs	
CH02-1-41	Pictograph	Outline	Brown	Non-Figurative	Geometric	Complex lines	Outline in brown, elongated roughly rectangular with series of four horizontal lines cutting across. Possibly artefact - such as dilly bag - or a representation of an animal not familiar to us. Small star or track at base, superimposed or part of same motif but same colour, technique and tight association -- so	

							classified as part of the same motif	
CH02-1-42	Pictograph	Outline	Brown	Track	Tracks	Bird track	Bird track facing downwards, faint and behind CH02-1-40 and CH02-1-41.	
CH02-1-43	Pictograph	Outline	Brown	Figurative	Animal	Marine Turtle	Brown turtle outline with large tail, may be Hawksbill turtle. Co-located on panel adjacent to and touching motif 040. Smaller than 040 though, possibly offspring?	
CH02-1-44	Pictograph	Outline	Brown	Figurative	non-diagnostic	Non-diagnostic	Incomplete motif. Similar form to hindquarters of turtles represented in adjacent images (040, 043)	
CH02-1-45	Pictograph	Infilled or solid	Brown	Non-Figurative	Geometric	Complex lines	Single, thick (1-2cm) line with a series of perpendicular lines cutting across it (12 in total). Lies beneath 045.	
CH02-1-46	Pictograph	Outline	Red	Figurative	non-diagnostic	Non-diagnostic	rounded shape with lines coming off of it, connecting with two vertical lines. May represent a jellyfish, or Morwood's linear figurative	
CH02-1-47	Pictograph	Outline	Brown	Figurative	Animal	Marine Turtle	Turtle with rounded shell and two lines across the shell running from between the head and right forelimb down to left foreleg. One eye shown	

							(left eye may be obliterated by wear). Partially covered by CH02-1-48	
CH02-1-48	Pictograph	Infilled or solid	Brown	Figurative	Animal	Freshwater tortoise	Tortoise with pronounced long neck and infilled shell and body. Long tail also present. Superimposed over CH02-1-47 and CH02-1-49.	
CH02-1-49	Pictograph	Infilled or solid	Brown	Figurative	Animal	Freshwater tortoise	Tortoise with pronounced long neck and infilled shell and body. Long tail also present. Claws shown on the forelimbs. Shell infill has a circular pattern that may be the result of the rock surface's natural texture. CH02-1-48 superimposed over part of the left forelimb along with CH02-1-50, which has a superimposed line passing through the neck.	
CH02-1-50	Pictograph	Outline	Brown	Figurative	Animal	Marine Turtle	Outline brown turtle with round shell and tail prominently shown. Eyes also shown as two dots. Series of perpendicular lines extending from outline of head. Some retouching done on hind legs. Superimposed over CH02-1-49	

CH02-1-51	Pictograph	Outline	Brown	Figurative	Animal	Marine Turtle	outline of brown turtle, elongated with two eyes shown. may have had some infill in the shell, but this is badly faded.
CH02-1-52	Pictograph	Infilled or solid	Brown	Figurative	Zoomorph	Zoomorph	Zoomorph with 4 hands (or claws) and wide rounded abdomen, infilled. Hands/claws have 4-5 lines, all drawn quite straight and at regular angles. Head lacks any detail and is represented as a solid circle but with remnants of short lines radiating from head (hair). Creature has a short stumpy tail about half the length of lower legs. Superimposed over CH-02-56.
CH02-1-53	Pictograph	Infilled or solid	Brown	Figurative	Animal	Lizard	Overlapping with CH02-1-52, sequence TBD. Long lizard like, infilled, tapered tail and rounded head. Four legs no detail on feet. Seems to have been retouched in front and on tail sections. Head touches tail of 052. May have same phases as CH02-1-52 and CH02-1-56
CH02-1-54	Pictograph	Infilled or solid	Brown	Figurative	Animal	Lizard	Similar in form to motif 53, head touches a protruding nodule on shelter wall.

CH02-1-55	Pictograph	Outline	Brown	Non-Diagnostic	non-diagnostic	Non-diagnostic	Quite faded motif that hasn't photographed well. Appears a bit like a crescent but too indistinct to be certain	
CH02-1-56	Pictograph	Infilled or solid	Brown	Figurative	Human	Man	Human form almost completely covered by CH02-1-52. Comes out beautifully with DStretch LYE filter	
CH02-2-57	Pictograph	Infilled or solid	Brown	Figurative	Anthropomorph	Anthropomorph	Human form with large digits on hands and feet. Some remnants indicating radiating lines from the head as well. Male genitalia shown	
CH02-2-58	Pictograph	Infilled or solid	Brown	Figurative	Animal	Lizard	Lizard figure superimposed over (or has superimposed onto) CH02-2-57. Similar relationship as in other lizard motifs at CH01-panel 1. Shows legs and arms, head indistinct but appears to overlap with adjacent anthropomorph	
CH02-2-59	Petroglyph	Pecked	Not applicable	Figurative	non-diagnostic	Non-diagnostic	Weathered engraving with possible head and abdomen, but not entirely diagnostic. Some similarity with dugong head but not 100% confident of this.	3
CH02-2-60	Petroglyph	Engraved	Yellow	Non-Figurative	Geometric	Stacked line series	Complex stacked line series, vertically oriented, associated with natural ridge line running	3

							horizontally across panel. Up to three rows of lines near centre of assemblage, with several engraved lines with pigment applied. Two colours used; mostly yellow but also a very faded red. Bird track in this series has been classified elsewhere	
CH02-2-61	Petroglyph	Engraved	Not applicable	Track	Tracks	Bird track	Amidst line series CH-02-2-60, facing upwards	4
CH02-2-62	Pictograph	Outline	Yellow	Non-Figurative	Geometric	Line along natural geometry	Colour matches to some portions of colouring in CH02-2-60. Travels along edge of rock below 57-61 and then downwards and back across to the right.	
CH02-2-63	Pictograph	Infilled or solid	Brown	Non-Figurative	Geometric	Single circle	Infilled single circle. Associated with second motif almost identical (67). Some indistinct pigment in surrounding area.	
CH02-2-64	Pictograph	Infilled or solid	Brown	Figurative	Human	Man	Badly eroded motif, likely male. Single stick figure, only barely visible under enhancement	
CH02-2-65	Pictograph	Infilled or solid	Brown	Figurative	Human	human	As with 064, but smaller and stands beside, may be a child	
CH02-2-66	Pictograph	Outline	Brown	Figurative	Human	human	Human, badly weathered. Arms and legs not depicted as straight lines, but slightly bowed.	

CH02-2-67	Pictograph	Infilled or solid	Brown	Non-Figurative	Geometric	Single circle	Infilled single circle. Associated with second motif almost identical (63). Some indistinct pigment in surrounding area.
CH02-2-68	Pictograph	Outline	Brown	Figurative	Human	human	Unusual proportions, badly eroded. Next to CH02-2-66 and sitting under a section of CH02-2-69. Legs appear splayed apart almost at right angles, so may also be unusual geometric motif -- but given associations interpreted as human.
CH02-2-69	Pictograph	Infilled or solid	Brown	Non-Figurative	Geometric	Line undulating	Line, 5cm wide that meanders along panel.
CH02-2-70	Pictograph	Infilled or solid	Brown	Figurative	Human	human	Large and most prominent motif on this panel. Body completely infilled, arms and legs lack other features (e.g. toes). Indeterminate as to whether M or F. Distinctive radiating lines emanating from head, hair or head dress? Associated with two other human motifs which are both touching this one
CH02-2-71	Pictograph	Infilled or solid	Brown	Figurative	Human	human	Quite faded human figure, no defining features. Touches large human figure (CH-2-2-70) (foot to arm).



CH02-2-72	Pictograph	Infilled or solid	Brown	Figurative	Animal	Dog	Dog with pointed ears and tail curling upwards. Proportion and style seem to indicate it may be associated with CH02-2-70	
CH02-2-73	Pictograph	Outline	Brown	Non-Figurative	Geometric	Single circle	Circle outline, with indistinct pigment at top, likely superimposition-- not clear	
CH02-2-74	Pictograph	Infilled or solid	Brown	Figurative	Human	human	Quite faded human figure, no defining features. Sits beneath right arm of motif 70 (large human).	
CH02-2-75	Pictograph	Infilled or solid	Brown	Figurative	Human	human	Quite faded human figure, no defining features. May be part of a series with 66 and 68	
CH02-2-76	Petroglyph	Engraved	Brown	Track	Tracks	Bird track	Badly eroded. filled with red pigment and applied after the dog CH02-2-72	3
CH02-2-77	Petroglyph	Engraved	Brown	Track	Tracks	Bird track	badly eroded. Above CH-02-2-76, may be a series	4
CH02-2-78	Pictograph	Indeterminate	Brown	Non-Diagnostic	non-diagnostic	Non-diagnostic	Badly weathered pigment area below 070. No clear motifs identifiable	
CH02-2-79	Petroglyph	Engraved	Not applicable	Non-Figurative	Geometric	Line Series	Badly weathered line series, at least 8 distinct lines. Located at bottom of panel near shelter floor, so high traffic area.	2
CH02-2-80	Petroglyph	Engraved	Brown	Non-Figurative	Geometric	Radiating lines	Long, linear motif. Two parts. First, a long line, with red infill and distinct white border as a result of	4

							engraving. Engraved the shape and then adding red pigment to the centre. Second part is a series of radiating lines from one end of the line (9), and these have a directional quality in that the lines all bend back towards the 'tail'.	
CH02-2-81	Petroglyph	Pecked	Not applicable	Non-Figurative	Geometric	Horizontal pit series	5-6 distinct pecked pits in series. Possibly a second but very indistinct pit series repeated beneath this.	5
CH02-2-82	Pictograph	Indeterminate	Brown	Figurative	non-diagnostic	Non-diagnostic	Badly weathered motif remnant, very faded but good indications of abdomen, legs, arms and head.	
CH02-2-83	Pictograph	Indeterminate	Brown	Figurative	non-diagnostic	Non-diagnostic	Badly weathered motif remnant, very faded but good indications of abdomen, legs, arms and head.	
CH02-2-84	Petroglyph	Indeterminate	Not applicable	Non-Figurative	Geometric	Crescent	One outlined or two nested crescents	3
CH02-2-85	Petroglyph	Indeterminate	Not applicable	Track	Tracks	Bird track	Single track, facing upwards. Above and to right of dog	3
CH02-2-86	Petroglyph	Engraved	Not applicable	Non-Figurative	Geometric	Complex lines	Faded engraved line, only shows in DStretch. Series of vertical lines cutting across this, hence complex line designation	3

CH02-2-87	Pictograph	Infilled or solid	Brown	Figurative	Human	human	Tall human, solid infilled brown. Very faded, only really visible in DStretch but discernible human shape. Sits behind CH02-2-85 and CH02-2-80.	
CH02-2-88	Pictograph	Infilled or solid	Brown	Figurative	Human	human	Small faded human, clear arms and legs, head etc. Other features indistinct. Adjacent to CH02-2-87	
CH02-2-89	Petroglyph	Indeterminate	Not applicable	Non-Figurative	Geometric	Complex lines	line series with irregular line placement and intersecting lines.	2
CH02-2-90	Petroglyph	Engraved	Not applicable	Track	Tracks	Bird track	Facing upwards, one of two beneath/adjacent to 'shooting star'	3
CH02-2-91	Petroglyph	Engraved	Not applicable	Track	Tracks	Bird track	Facing upwards, two of two beneath/adjacent to 'shooting star'	3
CH02-2-92	Petroglyph	Indeterminate	Not applicable	Non-Figurative	Geometric	Crescent	Complex crescent with vertical line infill	3
CH02-2-93	Pictograph	Outline	Brown	Track	Tracks	Bird track	Pigment track, no associated engravings. Facing upwards	
CH02-2-94	Pictograph	Outline	Brown	Track	Tracks	Bird track	Pigment track, no associated engravings. Facing upwards	
CH02-2-95	Pictograph	Outline	Brown	Non-Figurative	Geometric	Crescent	Thin crescent, other indistinct lines adjacent	
CH02-2-96	Petroglyph	Engraved	Not applicable	Track	Tracks	Bird track	Engraved track, one of four. Very faded. Form parallel series	2
CH02-2-97	Petroglyph	Engraved	Not applicable	Track	Tracks	Bird track	Engraved track, one of four. Very faded. Form parallel series	2

CH02-2-98	Petroglyph	Engraved	Not applicable	Non-Figurative	Geometric	Complex lines	A pair of elongated spheres, with angular edges at bottom. These overlie 'shooting star' motif,	4
CH02-2-99	Pictograph	Outline	Brown	Non-Figurative	Geometric	Complex lines	Very fine horizontal line with three vertical lines coming down from ends and centre, forming a kind of trident shape. Too broad and square to be tracks. Similar to CH02-2-100	
CH02-2-100	Pictograph	Outline	Brown	Non-Figurative	Geometric	Complex lines	Very fine horizontal line with three vertical lines coming down from ends and centre, forming a kind of trident shape. Too broad and square to be tracks. Similar to CH02-2-99	
CH02-2-101	Petroglyph	Engraved	Not applicable	Track	Tracks	Bird track	Engraved track, three of four. Very faded. Form parallel series	2
CH02-2-102	Petroglyph	Engraved	Not applicable	Track	Tracks	Bird track	Engraved track, four of four. Very faded. Form parallel series	2
CH02-3-103	Pictograph	Outline	Brown	Figurative	Animal	Marine Turtle	Outline of turtle with tail. No internal details. Under CH02-3-104	
CH02-3-104	Pictograph	Infilled or solid	Brown	Figurative	Human	Man	Single infilled human with genitalia	
CH02-3-105	Pictograph	Infilled or solid	Brown	Non-Figurative	Geometric	Line	Line at 45* angle cuts across adjacent motif and partially obscured.	

CH02-3-106	Pictograph	Outline	Brown	Non-Figurative	Geometric	Non-diagnostic	Circular shape with 11 protruding crescent shapes, one of which is larger and notched. Appears at a glance like a flower design. Needs lots of research.	
CH02-3-107	Pictograph	Infilled or solid	Brown	Figurative	Human	Man	Simple human figure with genitalia shown	
CH02-3-108	Pictograph	Infilled or solid	Brown	Figurative	Human	human	Partially obscured human, not genitalia visible. Arm of larger human superimposed across this motif	
CH02-3-109	Pictograph	Infilled or solid	Brown	Figurative	Human	human	Human simple figure with no distinctive features. Bird track CH02-3-110 engraved over this figure	
CH02-3-110	Petroglyph	Engraved	Not applicable	Track	Tracks	Bird track	Single upward-facing bird track superimposed over large human (109)	4
CH02-3-111	Pictograph	Infilled or solid	Brown	Figurative	Human	human	Simple human figure with no distinctive features	
CH02-3-112	Pictograph	Infilled or solid	Brown	Figurative	Human	Man	Simple human figure with genitalia shown and wide head with lateral downward facing protrusions. Appears similar to Quinkan heads. Line series 114 has removed some of the pigment	
CH02-3-113	Pictograph	Infilled or solid	Brown	Figurative	Human	human	Simple human figure with no distinctive features. Line series 114 has	

							removed some of the pigment	
CH02-3-114	Petroglyph	Engraved	Not applicable	Non-Figurative	Geometric	Line Series	Minimum of 15 parallel (vertical) lines which are superimposed over pictographs in this locality	3
CH02-3-115	Petroglyph	Engraved	Not applicable	Figurative	Contact	Lettering	Three letters - "R K A"	5
CH02-3-116	Petroglyph	Engraved	Not applicable	Track	Tracks	Bird track	Single upward facing engraved track,	2
CH02-3-117	Pictograph	Infilled or solid	Brown	Figurative	Human	human	Simple human figure with no distinctive features	
CH02-3-118	Petroglyph	Engraved	Not applicable	Non-Figurative	Geometric	Complex lines	Horizontal line with vertical lines coming off it in a downwards direction. Appears to be a more complex version of CH02-2-99 and CH02-2-100.	4
CH02-3-119	Pictograph	Infilled or solid	Brown	Figurative	Human	human	Simple human figure with no distinctive features. Head absent or not entirely clear	
CH02-3-120	Petroglyph	Engraved	Not applicable	Non-Figurative	Geometric	Line	Two parallel lines (vertical)	3
CH02-3-121	Petroglyph	Engraved	Not applicable	Non-Figurative	Geometric	Single circle	vaguely circular shape, badly eroded. Likely associated with two pairs of lines either side CH02-3-120 and CH02-3-122	3
CH02-3-122	Petroglyph	Engraved	Not applicable	Non-Figurative	Geometric	Line	Two parallel lines (vertical)	3
CH02-3-123	Pictograph	Infilled or solid	Brown	Figurative	Human	human	Human simple form with no distinctive features. Appears inside the shell of CH02-3-124	

CH02-3-124	Pictograph	Outline	Brown	Figurative	Animal	Marine Turtle	Elaborate marine turtle, extended appendages with tail and four 'flippers'. motif 124 superimposed over it (or vice-versa). Head partially absent.	
CH02-3-125	Pictograph	Infilled or solid	Brown	Figurative	Human	Marine Turtle	badly eroded simple human figure	
CH02-3-126	Petroglyph	Pecked	Not applicable	Non-Figurative	Geometric	Pit cluster	Group of scattered pits across CH02-3-117, CH02-3-125, and CH02-3-123. Appears to be after these motifs as it removes some pigment	3
CH02-3-127	Pictograph	Infilled or solid	Brown	Non-Figurative	Geometric	Crescent	Crescent over the head of CH02-3-112. may be associated	
CH02-3-128	Pictograph	Outline	Brown	Figurative	non-diagnostic	Non-diagnostic	Partial motif, possibly incomplete. Ovate outline with three lines extending from bottom area.	
CH02-3-129	Pictograph	Infilled or solid	Brown	Figurative	Animal	Macropod	profile view of macropod with pointed ears, distinct digits on the front paws, legs and tail. Superimposed over CH02-3-130	
CH02-3-130	Pictograph	Outline	Brown	Figurative	non-diagnostic	Non-diagnostic	Indeterminate outline largely obscured by Motif 129. Appears to include two partial appendages, similar to marine turtle in Motif 124	
CH02-3-131	Petroglyph	Engraved	Not applicable	Non-Figurative	Geometric	Line Series	At least nine vertical lines following the geometry of	3

							the rock under the letters RKA (CH02-3-115)	
CH02-3-132	Pictograph	Infilled or solid	Brown	Figurative	Human	human	Indistinct human, 'A' in CH02-3-115 superimposed over this.	
CH02-3-133	Petroglyph	Engraved	Not applicable	Non-Figurative	Geometric	Line Series	Five vertical lines slightly to the right of CH02-3-118, separated by a ridge in the rock	4
CH02-3-134	Pictograph	Infilled or solid	Brown	Figurative	Human	human	Indistinct human, but with feet wider apart than in other motifs. Vertical line through midriff, indistinct but possible spear?	
CH02-2-135	Pictograph	Infilled or solid	Brown	Track	Tracks	Bird track	Downward facing bird track, partly obscured by proximity to CH02-2-75	
WT01-1c-136	Pictograph	Infilled or solid	Brown	Figurative	Animal	Stingray	Quite faded motif, only clear in DStretch. Diamond-shaped motif with several unpainted patches or 'spots' adjacent to point where a long curved infilled line attaches to the body. Interpreted as ray body with patches, and long trailing tail. Poor condition.	
WT01-1b-137	Pictograph	Infilled or solid	Brown	Figurative	Artefact	Non-diagnostic	Elongated motif approx. 4-5 x longer than wide. Square(ish) at one end, pointed at other and with protruding point. Similar form to 'planer' artefacts documented in	



							ethnographic collections for the region.	
WT01-1b-138	Pictograph	Outline	Brown	Non-Figurative	Geometric	Star	Series of lines that all intersect at centre, forming a 'star' like motif with 6 points	
WT01-1b-139	Pictograph	Outline	Brown	Figurative	Animal	Lizard	Torso of lizard with long thick tail, two rear feet (with toe details), and one arm. Motif appears to be incomplete, rather than differentially weathered	
WT01-1b-140	Pictograph	Outline	Brown	Non-Figurative	Geometric	Non-diagnostic	Indistinct line feature resembling '?' or 'U' rotated counter-clockwise 90*. Some possible infilling with yellow-orange pigment, but this is also evident elsewhere on substrate. Heavily weathered.	
WT01-1b-141	Pictograph	Infilled or solid	Brown	Non-Figurative	Geometric	Line Series	Three vertical lines. Possible partial fourth line but indistinct	
WT01-1b-142	Pictograph	Outline	Brown	Non-Figurative	Geometric	Line	Simple line, vertical but not straight. Indistinct	
WT01-1b-143	Pictograph	Outline	Brown	Non-Figurative	Geometric	Complex lines	Series of adjacent lines, no apparent pattern. Some short, one very long.	
WT01-1b-144	Pictograph	Outline	Brown	Non-Figurative	Geometric	Complex lines	Two adjacent lines, vertical, one straight the other a curved 'L'. No evident pattern but could be associated with motif 143	

WT01-1b-145	Pictograph	Infilled or solid	Brown	Non-Figurative	Geometric	Line Series	Single row of vertical lines, no engraving noted. 15 or more lines	
WT01-1b-146	Pictograph	Infilled or solid	Brown	Non-Figurative	Geometric	Line Series	Single row of vertical lines, no engraving noted. 15 or more lines	
WT01-1b-147	Pictograph	Outline	Brown	Non-Figurative	Geometric	Single circle	Simple circle, possible point or dot in middle but not entirely clear	
WT01-1b-148	Pictograph	Infilled or solid	Brown	Non-Figurative	Geometric	Line Series	several rows of faded vertical lines, quite blurred and individual boundaries not always apparent. No engravings	
WT01-1b-149	Pictograph	Infilled or solid	Brown	Non-Figurative	Geometric	Stacked line series	Two rows of faded vertical lines, quite blurred and individual boundaries not always apparent. No engravings	
WT01-1b-150	Pictograph	Outline	Brown	Track	Tracks	Bird track	Faint track, downward direction (i.e. point to the top). Adjacent to a second similar track (151)	
WT01-1b-151	Pictograph	Outline	Brown	Track	Tracks	Bird track	Faint track, downward direction (i.e. point to the top). Adjacent to a second similar track (150)	
WT01-1c-152	Pictograph	Infilled or solid	Brown	Figurative	Human	Man	Male figure, solid or infilled with pigment. very small. Wasp nest over one foot.	
WT01-1b-153	Pictograph	Outline	Brown	Figurative	non-diagnostic	Non-diagnostic	outline of indeterminate figure that appears to be unfinished. One line extends down from the	

							left side almost down to the next panel.	
WT01-1b-154	Pictograph	Infilled or solid	Red	Figurative	non-diagnostic	Non-diagnostic	Distinct figure but heavily blurred and form indeterminate	
WT01-1b-155	Pictograph	Infilled or solid	Brown	Non-Figurative	Geometric	Line Series	Three or four vertical lines, pigment only and quite long in comparison to other line series at the site	
WT01-1b-156	Pictograph	Outline	Brown	Non-Figurative	Geometric	Non-diagnostic	Small figure, made up of two curved lines joined by horizontal lines, almost appearing like a worm.	
WT01-1b-157	Pictograph	Infilled or solid	Brown	Non-Figurative	Geometric	Line Series	Badly eroded line series only visible in DStretch	
WT01-1c-158	Pictograph	Infilled or solid	Brown	Non-Diagnostic	non-diagnostic	Non-diagnostic	Partially infilled indistinct shape that follows the natural line of the rock recess	
WT01-1c-159	Pictograph	Outline	Brown	Figurative	non-diagnostic	Non-diagnostic	indeterminate figure in outline. A downward facing crescent connects to a horizontal line at a right angle. Vertical line detail visible on the right portion inside the crescent and some line detail radiating out from the upper/outer edge.	
WT01-1c-160	Pictograph	Infilled or solid	Brown	Track	Tracks	Bird track	Downward facing bird track	
WT01-1c-161	Pictograph	Outline	Brown	Track	Tracks	Bird track	Downward facing bird track. May be associated with 162.	

WT01-1c-162	Pictograph	Outline	Brown	Track	Tracks	Bird track	Downward facing bird track. May be associated with 161.	
WT01-1a-163	Pictograph	Infilled or solid	Brown	Figurative	Anthropomorph	Anthropomorph	Very dark brown human figure with arms and legs and possible tail. One leg is sharply bent. Appears to be older than vertical lines intersecting.	
WT01-1a-164	Pictograph	Infilled or solid	Brown	Figurative	Anthropomorph	Anthropomorph	Very dark brown human figure, difficult to make out. Appears associated with 163	
WT01-1a-165	Pictograph	Infilled or solid	Brown	Figurative	Anthropomorph	Anthropomorph	Very dark brown human figure, difficult to make out. Appears associated with 163 and 164	
WT01-1a-166	Pictograph	Infilled or solid	Brown	Figurative	Anthropomorph	Anthropomorph	Light brown, very indistinct figure, appears to be part of four figures standing together. (166-169)	
WT01-1a-167	Pictograph	Infilled or solid	Brown	Figurative	Anthropomorph	Anthropomorph	Light brown, very indistinct figure, appears to be part of four figures standing together. (166-169)	
WT01-1a-168	Pictograph	Infilled or solid	Brown	Figurative	Anthropomorph	Anthropomorph	Light brown, very indistinct figure, appears to be part of four figures standing together. (166-169)	
WT01-1a-169	Pictograph	Infilled or solid	Brown	Figurative	Anthropomorph	Anthropomorph	Light brown, very indistinct figure, appears to be part of four figures	

							standing together. (166-169)	
WT01-1a-170	Pictograph	Outline	Brown	Non-Figurative	Geometric	Complex lines	Cross-hatched configuration of vertical, diagonal and curved lines that follow the geometry of the alcove. Appear to cross in front of and thus postdate 163-169.	
WT01-1a-171	Pictograph	Infilled or solid	Brown	Non-Figurative	Geometric	Dots	Series of dots running along the lower edge of the alcove. Similar in colour to, but not as dark as 163-165	
WT01-1a-172	Pictograph	Infilled or solid	Brown	Figurative	non-diagnostic	Non-diagnostic	Five solid curved lines, stemming up and out from a central point. Covered in several places with wasp nests	
WT01-1a-173	Pictograph	Infilled or solid	Brown	Non-Figurative	Geometric	Line Series	Very faded line series that follows the natural geometry of the rock surface	
WT01-1a-174	Pictograph	Indeterminate	Brown	Non-Diagnostic	non-diagnostic	Non-diagnostic	Badly eroded and indistinct painted motif	
WT01-1a-175	Pictograph	Indeterminate	Brown	Non-Diagnostic	non-diagnostic	Non-diagnostic	Badly eroded and indistinct painted motif	
WT01-1a-176	Pictograph	Infilled or solid	Brown	Non-Figurative	Geometric	Dots	Two diverging sets of dots	
WT01-1a-177	Pictograph	Infilled or solid	Brown	Track	Tracks	Bird track	Very badly eroded. May be two distinct motifs, at least one downward facing elongated bird track visible. It may have been a pair but it's too difficult to see.	

WT01-1a-178	Pictograph	Infilled or solid	Brown	Non-Diagnostic	non-diagnostic	Non-diagnostic	Badly eroded and indistinct painted motif
WT01-1a-179	Pictograph	Infilled or solid	Brown	Non-Figurative	Geometric	Crescent	At least one crescent shape, with blurred motifs beside it to the left. May be more than one crescent but too badly eroded to tell.
WT01-1a-180	Pictograph	Infilled or solid	Brown	Figurative	Human	human	Badly eroded human figure with torso and arms still visible.
WT01-1a-181	Pictograph	Infilled or solid	Brown	Non-Figurative	Geometric	Radiating lines	At least four radiating lines coming to the edge of the natural alcove.
WT01-1a-182	Pictograph	Outline	Brown	Non-Figurative	Geometric	Line along natural geometry	outline along and around the alcove that holds 163-171. Also has radiating lines coming off from the upper portion of the alcove
WT01-1a-183	Pictograph	Infilled or solid	Brown	Non-Figurative	Geometric	Crescent	Complex crescent with vertical line infill
WT01-1a-184	Pictograph	Outline	Brown	Non-Figurative	Geometric	Line along natural geometry	Circle around natural pit in the rock surface about the alcove
WT01-1a-185	Pictograph	Indeterminate	Brown	Non-Diagnostic	non-diagnostic	Non-diagnostic	General area of poor preservation and bad erosion. Several motifs likely but impossible to make out
WT01-1a-186	Pictograph	Infilled or solid	Brown	Non-figurative	Geometric	Line Series	Badly eroded line series sitting above 187
WT01-1a-187	Pictograph	Infilled or solid	Brown	Non-figurative	Geometric	Line Series	Badly eroded line series with underline sitting above 188

WT01-1a-188	Pictograph	Infilled or solid	Brown	Non-figurative	Geometric	Complex lines	Badly eroded series of vertical lines with underline following the geometry of the rock surface	
WT01-1a-189	Pictograph	Infilled or solid	Brown	Non-figurative	Geometric	Dots	Two series of dots that converge on the right side	
WT01-1a-190	Pictograph	Infilled or solid	Brown	Non-Diagnostic	non-diagnostic	Non-diagnostic	badly eroded motif that may be a short line series or a bird track, or an indistinct human figure.	
WT01-1a-191	Pictograph	Infilled or solid	Brown	Non-figurative	Geometric	Radiating lines	Densely packed radiating lines with a wasp's nest over part of the upper portion	
WT01-1a-192	Pictograph	Infilled or solid	Brown	Figurative	non-diagnostic	Non-diagnostic	Area of frequent use and superimposition, along with multiple wasp nests over the top.	
WT01-1a-193	Pictograph	Infilled or solid	Brown	Non-figurative	Geometric	Stacked line series	2-3 horizontal lines vertically stacked. third (lowest) one is likely under the wasp nest	
WT01-1a-194	Pictograph	Infilled or solid	Brown	Non-figurative	Geometric	Line Series	6 vertical lines	
WT01-1a-195	Pictograph	Infilled or solid	Brown	Non-figurative	Geometric	Line	Curved line. May form a crescent with 196	
WT01-1a-196	Pictograph	Infilled or solid	Brown	Non-figurative	Geometric	Line	Curved line. May form a crescent with 195	
WT01-1a-197	Pictograph	Infilled or solid	Brown	Non-figurative	Geometric	Line Series	6 vertical lines	
WT01-1a-198	Pictograph	Infilled or solid	Brown	Non-figurative	Geometric	Line	Curved line	
WT01-1a-199	Pictograph	Infilled or solid	Brown	Non-Diagnostic	non-diagnostic	Non-diagnostic	General area of poor preservation and bad	

							erosion. Several motifs likely but impossible to make out	
WT01-1c-200	Pictograph	Infilled or solid	Brown	Non-figurative	Geometric	Line Series	5 vertical lines, badly faded.	
WT01-1c-201	Pictograph	Infilled or solid	Brown	Non-figurative	Geometric	Complex lines	10 vertical lines joined with a horizontal line at the top.	
WT01-1c-202	Pictograph	Infilled or solid	Brown	Track	Tracks	Bird track	Series of three associated bird tracks facing downwards and arranged vertically	
WT01-1c-203	Pictograph	Infilled or solid	Brown	Non-figurative	Geometric	Line along natural geometry	badly eroded line that follows a break/ledge in the rock	
WT01-1c-204	Pictograph	Infilled or solid	Brown	Track	Tracks	Bird track	Bird track facing left	
WT01-1c-205	Pictograph	Infilled or solid	Brown	Non-figurative	Geometric	Crescent	Crescent shape facing downwards. Sits above 204	
WT01-1c-206	Pictograph	Infilled or solid	Brown	Non-figurative	Geometric	Line Series	Series of 16 vertical lines	
WT01-1c-207	Pictograph	Infilled or solid	Brown	Non-figurative	Geometric	Line Series	Long series of vertical, very short lines extends quite a long way across the rock surface	
WT01-2-208	Pictograph	Infilled or solid	Brown	Non-figurative	Geometric	Complex lines	Single line that diverges to a forked end at the bottom, cut across by 12 horizontal lines that finish just before the fork.	
WT01-2-209	Pictograph	Infilled or solid	Brown	Non-Diagnostic	non-diagnostic	Non-diagnostic	Filled motif that has faded too much to determine. Appears as very faint lines	



WT01-2-210	Pictograph	Infilled or solid	Brown	Non-figurative	Geometric	Complex lines	Horizontal line, quite thick in some sections intersected with 13 vertical lines
WT01-2-211	Pictograph	Infilled or solid	Brown	Non-figurative	Geometric	Complex lines	Forked thick painted line. Indeterminate shape.
WT01-2-212	Pictograph	Outline	Brown	Non-Diagnostic	non-diagnostic	Complex lines	Round shape with internal line detail and two protruding lines. Bears similarity to 39
WT01-2-213	Pictograph	Infilled or solid	Brown	Non-figurative	Geometric	Complex lines	At least 10 vertical lines and one horizontal line underneath
WT01-2-214	Pictograph	Infilled or solid	Brown	Non-figurative	Geometric	Line Series	Series of 5 vertical lines
WT01-2-215	Pictograph	Infilled or solid	Brown	Non-figurative	Geometric	Complex lines	Series of 5 vertical lines with intersecting horizontal line
WT01-2-216	Pictograph	Infilled or solid	Brown	Non-figurative	Geometric	Line Series	Series of 4 vertical lines
WT01-2-217	Pictograph	Infilled or solid	Brown	Track	Tracks	Bird track	pair of tracks with a dot underneath, facing upwards. May be Morwood's complex bird type
WT01-3-218	Pictograph	Infilled or solid	Brown	Non-figurative	Geometric	Complex circle	Circular shape with central vertical line bisecting.
WT01-3-219	Pictograph	Infilled or solid	Brown	Non-figurative	Geometric	Complex circle	Circular shape with central vertical line bisecting.
WT01-3-220	Pictograph	Infilled or solid	Brown	Non-figurative	Geometric	Line undulating	Undulating line that may be associated with or connected to 221. Possibly bends around

							panel to far right long linear motif ('serpent')	
WT01-3-221	Pictograph	Infilled or solid	Brown	Non-figurative	Geometric	Line undulating	horizontal line with a curve on the left side. may be assoc. with 220	
WT01-3-222	Pictograph	Infilled or solid	Brown	Non-figurative	Geometric	Complex lines	At least 8 vertical lines, badly weathered and intersected by a horizontal line	
WT01-3-223	Pictograph	Infilled or solid	Brown	Non-figurative	Geometric	Complex lines	Series of at least 22 vertical lines intersected by a long horizontal line	
WT01-3-224	Pictograph	Infilled or solid	Brown	Non-figurative	Geometric	Complex lines	Two parallel vertical lines	
WT01-3-225	Pictograph	Infilled or solid	Brown	Non-figurative	Geometric	Line Series	At least 7 vertical parallel lines arranged on the edge of a curve in the rock.	
WT01-3-226	Pictograph	Infilled or solid	Brown	Non-figurative	Geometric	Crescent	Series of up to 4 nested crescents facing downwards	
WT01-3-227	Pictograph	Infilled or solid	Brown	Non-figurative	Geometric	Crescent	Rather open crescent, with thicker paint application than 226	
WT01-3-228	Pictograph	Infilled or solid	Brown	Non-figurative	Geometric	Line Series	Series of very long lines at an angle (leaning left).	
WT01-3-229	Pictograph	Infilled or solid	Brown	Non-figurative	Geometric	Line undulating	Long line, solid brown and meanders across panel from top left to bottom right. Appears to be associated with natural features in rock (elevated areas). One end starts (or finishes) inside rock crevice, the	

							other has a tapered appearance as if depicting a tail. Nothing obvious where 'head' of a snake (etc) might be located.	
WT01-3-230	Pictograph	Infilled or solid	Brown	Non-figurative	Geometric	Complex lines	Line series comprising 5 lines with infilled solid area running perpendicular to lines located across central portion of line series	
WT01-3-231	Pictograph	Infilled or solid	Brown	Non-figurative	Geometric	Complex geometric	Complex assemblage of brown-red dots. These form a rounded feature with perhaps several dozen dots, with a further protruding linear 'tail-like' feature. Other end has 10 or more thin parallel lines. Possibly two superimposed images but distinctly associated with each other so interpreted as complex with multiple geometric features.	
WT01-3-232	Pictograph	Infilled or solid	Brown	Non-figurative	Geometric	Complex geometric	Similar appearance to WT01-3-231. Rounded area of dots with two solid lines passing from top to bottom, cutting through body of dots. Two lines 'crossed' at top by one short line	
WT01-3-233	Pictograph	Infilled or solid	Brown	Non-Diagnostic	non-diagnostic	Non-diagnostic	Rounded but indeterminate motif,	

							weathered. Infilled oval-shaped feature	
WT01-4-234	Pictograph	Infilled or solid	Brown	Figurative	Human	Deceased human	Male figure, lying on his side with 4 lines crossing his abdomen (spears)	
WT01-4-235	Pictograph	Infilled or solid	Brown	Non-figurative	Geometric	Complex geometric	Two vertical lines that curve away from each other at the top. They are intersected by short horizontal lines at the bottom. Bottom right hand line is partially covered by wasp nest. These lines are also surrounded by a complex cluster of dots and intersected again by a long horizontal line just before the start of the curved top section.	
WT01-4-236	Pictograph	Infilled or solid	Brown	Non-figurative	Geometric	Line Series	Motif quite degraded (animal rubbing on low portion of panel). Minimum of 6 parallel lines, others likely but destroyed	
WT01-4-237	Pictograph	Infilled or solid	Brown	Non-Diagnostic	non-diagnostic	Non-diagnostic	Low portion of panel with animal rub marks. Evidence of application of pigment across the area but form unclear	
WT01-4-238	Petroglyph	Pecked	Not applicable	Non-figurative	Geometric	Complex lines	Complex lines that may be a star originally, however the exact shape blends into a natural fissure in the rock and is difficult to discern	1

WT01-4-239	Petroglyph	Pecked	Not applicable	Non-figurative	Geometric	Crescent	Crescent, but oriented with open end to the left (as in a back the front 'C'). Bottom of motif damaged/incomplete	1
WT01-4-240	Petroglyph	Pecked	Not applicable	Non-figurative	Geometric	Crescent	Crescent, oriented with open end towards the base.	1
WT01-4-241	Petroglyph	Pecked	Not applicable	Non-figurative	Geometric	Complex lines	Upturned 'Y' but not considered to be a track as the bottom right line is more elongated than bottom left.	1
WT01-4-242	Petroglyph	Pecked	Not applicable	Non-figurative	Geometric	Complex lines	Line series of 3 horizontal lines and one nearly vertical line cutting across these. Lower portion of motif damaged and motif potentially incomplete. Two pecked pits on either side of top of this motif	1
WT01-4-243	Petroglyph	Pecked	Not applicable	Non-figurative	Geometric	Complex lines	One long slightly curved line intersected by 5-6 horizontal lines. Touches the right-hand edge of 245	1
WT01-4-244	Petroglyph	Pecked	Not applicable	Non-figurative	Geometric	Complex lines	One vertical line crossed by 3 horizontal lines. Sits to the right of 243	1
WT01-4-245	Petroglyph	Pecked	Not applicable	Non-figurative	Geometric	Complex lines	Sits below 238. Complex lines made by a crossing of one horizontal and one vertical line.	1
WT01-4-246	Petroglyph	Pecked	Not applicable	Non-figurative	Geometric	Vertical pit series	Three pits in alignment	1

WT01-4-247	Petroglyph	Pecked	Not applicable	Non-figurative	Geometric	Complex lines	Degraded complex line with line series (3 x horizontal lines) and a single line cutting through from top to bottom	1
WT01-4-248	Petroglyph	Pecked	Not applicable	Non-figurative	Geometric	Pit	Single wide, shallow pit. Multiple percussive strikes clearly visible	1
WT01-4-249	Pictograph	Infilled or solid	Brown	Non-figurative	Geometric	Star	Star made from 5 lines radiating from the centre.	
WT01-4-250	Pictograph	Infilled or solid	Brown	Track	Tracks	Bird track	Elongated downward facing bird track intersected by a horizontal line	
WT01-4-251	Pictograph	Infilled or solid	Brown	Non-figurative	Geometric	Line horizontal	thick horizontal line somewhat following the natural curvature of the rock face	
WT01-4-252	Pictograph	Infilled or solid	Brown	Non-figurative	Geometric	Complex lines	poorly preserved. Series of short vertical lines intersected by some curving lines and an underline that follows the natural rock	
WT01-4-253	Pictograph	Infilled or solid	Brown	Non-figurative	Geometric	Complex geometric	Two lines, 1 @ ~45 deg the other @90 deg. Each has radiating lines from the end of the line -- almost appear as if feet/toes/hands/fingers. Associated (touching) crescent at top, with line protruding perpendicular to one of the legs.	
WT01-4-254	Pictograph	Infilled or solid	Brown	Non-figurative	Geometric	Complex lines	Two thick lines intersecting, one	

							horizontal, one vertical forming a square cross shape.	
WT01-4-255	Pictograph	Infilled or solid	Brown	Non-Diagnostic	non-diagnostic	Non-diagnostic	Indeterminate smudge. Vaguely circular in shape	
WT01-4-256	Pictograph	Infilled or solid	Brown	Non-figurative	Geometric	Complex lines	Poorly preserved grouping of complex lines, including Morwood's 'rake' type. Some face upwards and others face downwards. Significant smudging and running of pigment in the lower portion of the motif	
WT01-5-257	Pictograph	Outline	Brown	Non-figurative	Geometric	Complex lines	Two parallel horizontal lines running horizontal across a small natural grotto. These are crossed at multiple points by vertical lines, and some subsidiary other horizontal lines. Overall appearance like a grid pattern, filling in the available space. no infilling evident	
WT01-5-258	Pictograph	Infilled or solid	Brown	Non-figurative	Geometric	Star	nine lines radiating out from a central point, leaving an unpainted centre point. The lines are of somewhat even lengths and although not symmetrical, the lines are evenly spaced.	
CH02-2-259	Pictograph	Infilled or solid	Brown	Figurative	Zoomorph	Non-diagnostic	Motif extending from left hand of 070 human figure to the ground. Head in or	

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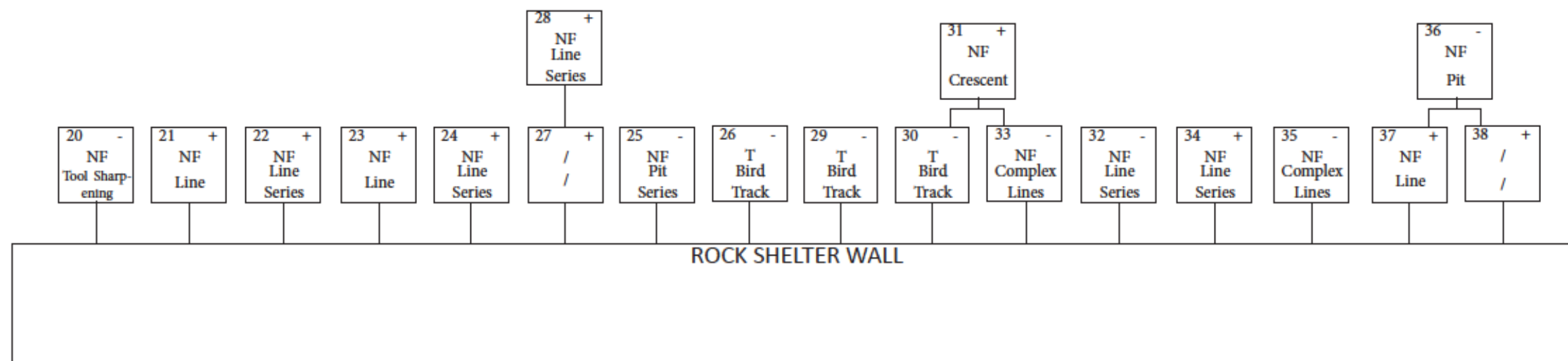
							near hand of 070, and two arms or legs adjacent. Abdomen of figure infilled with blurred area around where feet should be. Feet of 070 and this motif 259 both intersect with 69 (line) that runs beneath.	
CH02-2-260	Pictograph	Infilled or solid	Brown	Figurative	Human	Non-diagnostic	Very faint and sits to the left of 81 and 82. Basic human shape	
CH02-2-261	Pictograph	Infilled or solid	Brown	Figurative	Human	Non-diagnostic	Like 260 and sitting to the immediate left.	



APPENDIX 3.1 HARRIS MATRIX CHUULA 1 PANEL 3

Chuula 1 Panel 3

LEGEND  
+ = Pictograph  
- = Petroglyph  
/ = Non-Diagnostic  
F = Figurative  
NF = Non-figurative  
T = Track

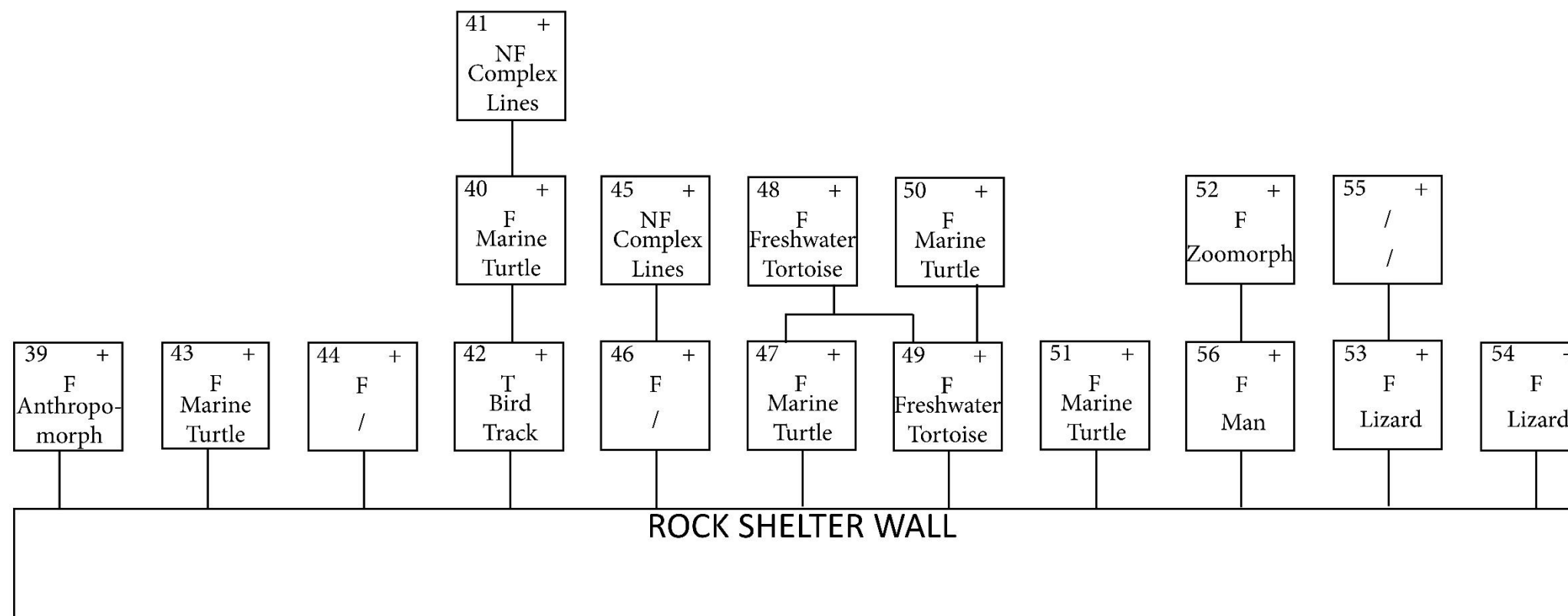


APPENDIX 3.2 HARRIS MATRIX CHUULA 2 PANEL 1

Chuula 2 Panel 1

LEGEND

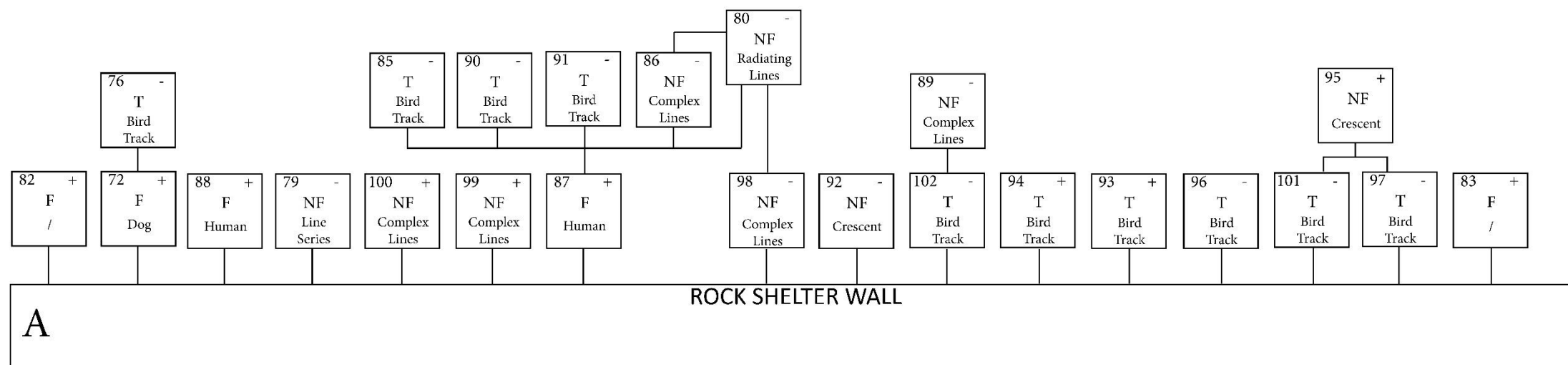
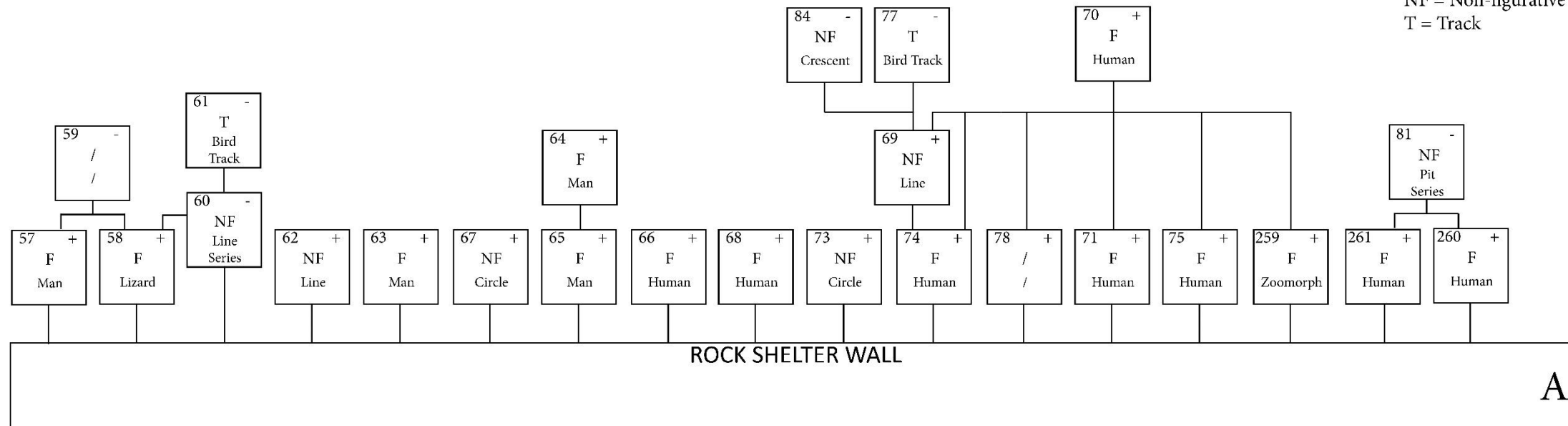
- + = Pictograph
- = Petroglyph
- / = Non-Diagnostic
- F = Figurative
- NF = Non-figurative
- T = Track



APPENDIX 3.3 HARRIS MATRIX CHUULA 2 PANEL 2

Chuula 2 Panel 2

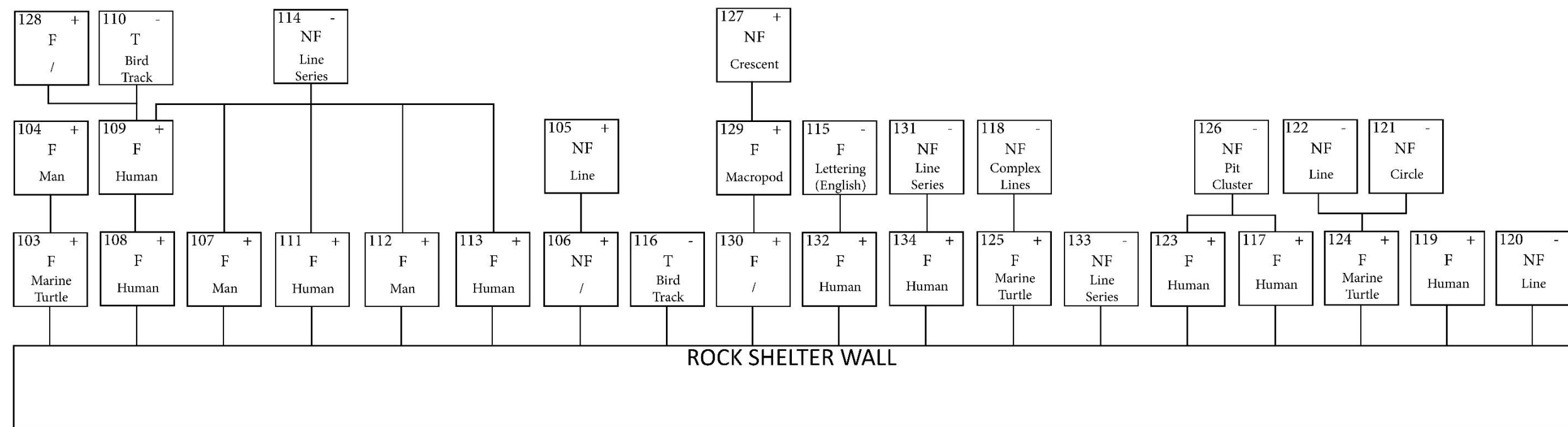
LEGEND  
 + = Pictograph  
 - = Petroglyph  
 / = Non-diagnostic  
 F = Figurative  
 NF = Non-figurative  
 T = Track



APPENDIX 3.4 HARRIS MATRIX CHUULA 2 PANEL 3

Chuula 2 Panel 3

LEGEND  
 + = Pictograph  
 - = Petroglyph  
 / = Non-diagnostic  
 F = Figurative  
 NF = Non-figurative  
 T = Track



APPENDIX 3.5 HARRIS MATRIX WA'TANCHI PANEL 1A

Wa'tanchi Panel 1a

LEGEND  
 + = Pictograph  
 - = Petroglyph  
 / = Non-diagnostic  
 F = Figurative  
 NF = Non-figurative  
 T = Track

