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Alma Nankela

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Universidade de Trás-os Montes e Alto Douro



**International Doctorate in
QUATERNARY AND PREHISTORY
Doutoramento Quaternário, Materiais e Culturas**

ROCK ART AND LANDSCAPE:

An empirical Analysis in the content, context and distribution of the rock art sites in Omandumba East and West, Erongo Region-Namibia

ALMA MEKONDJO NANKELA

Orientadores : Professor Doutor Luiz Miguel Oosterbeek
 Professor Doutor François Sémah
 Professor Doutor David Pleurdeau

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Júri:

Presidente: Prof. Dr. Luís Herculano Melo de Carvalho

Prof. Dr. Denis Vialou (arguente)

Prof. Dr. Luis Jorge Rodrigues Gonçalves (arguente)

Prof. Dr. Dra Maria Emilia Pereira Simões de Abreu (vogal)

Prof. Dr. David Pleurdeau (vogal)

Prof..Dr. Tilman Lenssen-Erz (relator Erasmus-mundus)

“Our current lives are linked with the lives of others both past and present, as part of a deep and wide river of human experience moving through time” (Lipe 2002:28).

DECLARATION

I hereby, declare that this thesis is my own work and that, to the best of my knowledge and belief, it contains no material, which has been accepted or submitted for the award of any other degree or diploma.

I also declare that, to the best of my knowledge and belief, this thesis contains no material previously published or written by any other person except where due reference is made in the text of the thesis.

Alma MekondjoNankela
Researcher

DEDICATED

To the Namibian child

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PREFACE

I think most people think that you're almost born to be an archaeologist. I wasn't that kid, that played in a sandbox to become a future archaeologist. My own experiences and interests were different. "Why archaeology?" "What is so interesting about...studying prehistoric cultures that are no longer relevant in today's societies", "spending your life digging in the dirt", or "studying prehistoric doodles?" I have often been asked. I must admit; at first, I, too, was rather unimpressed. I grew up with the love of the outdoors that largely shaped by my childhood years in refugees' camps in Angola during Namibia liberation struggle and years spent in the village shortly after Namibian independence.

Growing up, right from onset, I've always had love for a History and Geography. I was nurtured quiet early from my parents who shared their experiences when they joined the struggle for the liberation of Namibia. Fleeing their homes and country into exile at a very tender age of 14 years old. The risks on the journeys to the borders, walking for miles through days and nights to avoid being noticed, shot at or being caught by insurgents. Most of them were caught in a war and experienced grim hazards and tragic loss at the epicentre of violence, including their homes and the loss of their beloved family members. They had endured harrowing voyages from their own home as they sought refuge in Angola- a long journey for children who arrived often exhausted with wounded feet as they walked for days, weeks and then months before they could join their Namibian brothers and sisters with a common objective. My parents narrated their walks and how they 'd shared their pains and became each other's parents, binding one another's wounds, sharing sips of mud water and burying their dead and how their spirits of hope remained strong through their unyielding faith in God. These young people were bright, full of life, with burning desire to become contributing members of their communities both in the exile and rebuilding their country once liberated. In recounting their stories, sometimes they experience a measure of therapeutic catharsis. But revisiting their experiences also triggers a deep sense of loss and anguish. These brave persons endured this for the one reason only- to liberate Namibia. Over the years, my parents drilled these accounts into my head and that of my siblings over and over again, making sure that we understood every bit of it. A lesson, I am very much aware, they are sharing with their grandchildren and experiences, they're narrating in their book.

So, I went to high school, knowing exactly what I wanted to study. I wanted to do something I was inspired by. There is nothing in the world that does not become intriguing and far more mysterious-once we recognize the complex events and causes that led to its creations. So, I chose History and Geography. I wanted to explore the diversity of human experiences, how profound people have differed in their ideas and cultural practices, how widely their experiences varies over period and circumstances, how they have struggled with each other while inhabiting a shared world and how they had explored every conceivable aspect of their reality in time and place. Their material cultures, many of which are passed down from one generation to another, the remnants of their ancestors, some of which are exhibited in museums today but many remains within families, the physical objects of the culture and the idea associated with them. Whilst at University, I continued with the discipline of History and Geography as I became more interested in the story behind every material culture; so slowly, I became more interested in the artifact and I guess, that's where archaeology bug bit me.

My initial interest in archaeology was largely driven by the fact that Namibia has even today acute shortage of archaeologists even with its extensive archaeological records in the region. There are number of factors might attribute this including but not limited to lack of awareness of the discipline, widespread emphasis engrossed primarily on mathematics and technology whilst overlooking heritage, a perception that heritage is not strategic resource etc. But fortunately the status quo is slowly improving. Knowing the complexity of the archaeology as a discipline, I was drawn to rock art largely because my archaeology lecturer and mentor at University. He too, admit was fascinated by the enigma of rock art. The same has happened to me, and this dissertation in a way, I am hoping it convey, in addition to the theories and scientific evidence, something of the deep enthrallment I have felt in my encounters with prehistoric rock art. Although many people find it incomprehensible and tedious thing of the past, I am convinced that anyone who makes the effort to understand it will realize that it's a rewarding experience, because these prehistoric remnants carries messages that are universal in the fullest sense of the word. It reflects the thoughts and worldview of an era in time that was of fundamental significance to human evolution and which therefore, apart from being one of our greatest surviving prehistoric written art treasures. It possesses a large body of evidence of human artistic, cognitive, and cultural beginnings. The intrinsic efficacy of rock art lies in its universality of appeal and to sustain it in a manner in which all can discern it. Therefore, it was a proud privilege for me to conduct my research in Omandumba farms where we stand in the global context especially in terms of rock art studies.

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Undertaking this PhD has been a truly life-changing experience for me and it would not have been possible to do without the immense supports and guidance that I have received from many people all deserving of my appreciations. I gratefully acknowledge the funding received from the Board of Erasmus Mundus Consortium Scholarship for granting me this three years fellowship to pursue this Joint Doctorate Program of the International Doctorate in Quaternary and Prehistory at two partner institutions.

Any academic merit in this study owes much to the guidance of my supervisors and advisors. They have provided substantial ideas and suggestions for my study. I would like to first say a very big thank you to my supervisor Dr David Pleurdeau for all the encouragement and guidance you gave me every step of the way especially during months I spent undertaking my field work in Namibia. Without your guidance and constant feedback, this PhD would not have been achievable. I greatly appreciate the support and brilliant mentorship from Professor Luiz Oosterbeek whose insights, valuable discussions were enriching. You have both created the invaluable space for me to do this research and develop myself as a researcher in the best possible way. I greatly appreciate the freedom you have given me to find my own path and the guidance and support you offered when needed. I also want to take a moment to thank Dr. Tilman Lenssen-Erz for investing time and providing interesting and valuable feedbacks. Your mix of straightforward criticism has given me great confidence as a researcher, and at the same time made me realize that I am only a beginner in this exciting profession.

While supervision, discussion and inspiration have all been important for the materialisation of this thesis, some people have directly contributed to its contents, namely researchers, the students who worked on the empirical projects and scientific analysis of the pigments. A special thank you to my colleague Sara Garcês from the Museu de Arte Pré-histórica do Sagrado Vale do Tejo and its friendly staff; Instituto Terra e Memória and Fundação Museu. Methodologies used in this thesis have been the backbone of this research. Most of the results described in this thesis would not have been obtained without a close collaboration with the multi-disciplinary team from the Museum National D'Histoire Naturelle whose support went beyond the field and laboratory studies. I owe a great deal of appreciation and gratitude to Dr. Matthieu Lebon, Océane Lapauze, and Guilhem Mauran and to Dr. Florent Detroit. For your time, expertise, keen interest and dedication to 'mission archéologique en Namibie'. I equally indebted to Mr. Kxao /Lukxaov and Mr. N!ani R!kxao, from Omandumba San Living Museum, whose inherent traditional knowledge of animal tracking had assisted me enormously in identifying animal figures and spoor tracks depictions in rock art of Omandumba farms. Thank you so much for your knowledge, skills and time. Without your astonishing supports, I would have been nowhere. The interviews recorded for the study had enriched this research and generally rock art interpretation in Namibia.

My deep appreciation goes out to the local field research team members: Mrs. Fousy Shinana-Kambombo, Maria Mwatondange and Tuuda Haitula. Their excellent team efforts during data collection have made an invaluable contribution towards my PhD.

And then of course, my special and heartily thanks to the Rust family. Words fail me to express my sincere appreciation for your supports, time, efforts, understanding, generous care and the homely feeling in Omandumba. Thank you doesn't seem sufficient but it is said with appreciation and respect to you. From the beginning of this research, you made our stay very

comfortable in every possible way. You were instrumental in assisting us to locate most of the rock art sites in your farm. You have provided us with free and safe accommodation at your campsites, safe drinking water and have allowed us to charge our camera batteries in their house. I am also grateful to your family, friendship and the warmth you have extended to us for the past five years.

I express my gratitude to all colleagues who reviewed my work. The diversity of opinions, comments, and criticisms, made my work and writing genuine and legitimate. A very special thanks you to Luis Mitras for your invaluable advice and feedback on my research, especially with the mammoth task of reviewing the final editing of this thesis. I am also very grateful to individuals in various institutions in Namibia such as the National Museum of Namibia, the National Heritage Council, the Geological Survey of Namibia and the Ministry of Lands and Resettlement of Namibia, for providing logistics supports to this the projects, in form of the heritage research permits, fieldwork vehicles, drivers, camping equipment and all primary rock art recording equipment. Without your supports, this thesis would have not been possible.

I would also like to say a heartfelt thank you Dr. Jeremy Silvester for always believing in me, nurturing my professional growth and encouraging me to follow my dreams. I want to express my thanks first and foremost to my fiancée, my family, my friends, and my co-workers who have helped me through this project by providing unfailing moral support, and by keeping me on track when I wandered off. Laurent Vareliette has dedicated countless hours of guidance and invaluable critique. To them, for them, I will always be grateful.

My academic life in Mação Portugal were facilitated and coordinated by much hospitality and innumerable courtesies from Professor Artur Agostinho de Abreu Sa and Professor João Baptista at UTAD as well as very friendly staffs at the Museu de Arte Pré-histórica do Sagrado Vale do Tejo including Dr. Margarida Morais, Sara Garces and Dr. Sara Cura. The Erasmus Mundus mobility studies at the Museum National d'Histoire Naturelle in Paris were coordinated by Professor François Sémah, Dr. ChafikaFalguele, Dr. David Pleurdeau and the friendly administrative staffs at the Musée de L'homme, for whom I am eternally grateful. Finally, I would also like to thank members of the júris for having accepted to assess my thesis.

To my parents meme Maria Fatima Hamulo and tate Penda Nankela, thank you for your sacrifices and devotions to my academic life.

You gave me a purpose.

ABSTRACT

Much of the research into rock art in Namibia has focused on the Brandberg, Spitzkoppe and Twyfontein mountains. These are national and World Heritage sites in central Namibia where the largest densities of prehistoric rock art sites have been recorded. Very little attention has been given to another key rock art area in central Namibia - the Erongo Mountains. The central objective of this study is to establish whether the spatial distribution of rock art in Omandumba in the Erongo Mountains has a density comparable to those other well-researched sites. It is hoped that this research will add values to the existing body of knowledge about rock art in Central Namibia.

To achieve this, this study adopted a contextual approach to the study of rock art in relation to its landscape. The landscape approach considers a number of variables, namely, its spatial distribution, the possible target audience, accessibility, elevation, proximity to water sources and animal trails, aspect/orientation, the placement and visibility of rock art sites in the landscape. For our purposes, an interdisciplinary framework was adopted: data obtained from archaeology, bioarchaeology, ethnography, ethno-history, geology, geography, paleoenvironment, GIS and zooarchaeology have been applied to investigate the rock art sites in relation to their contexts, this to better understand their spatial distribution. In addition to the spatial variables, the study further studied the morphological aspects of both paintings and engravings, and determined their overall state of preservation. The study has also established the sources and geographical origin of the raw materials used in the production of rock paintings. These were extracted from three contexts namely: archaeological sequences, geological and by means of *in situ* analyses of pigments from suitable rock painting sites. The chronological sequences of painted figures were also established.

The contextual data for this study were collected through a systematic surveys and documentation of rock art that was carried out in field campaigns of 2014 and 2016 in Omandumba East and West farms in the Erongo Mountains, Namibia. In total, 60 rock painting sites containing 70 rock painted panels were recorded. In addition, a rock-engraving site containing 50 engraved panels was also recorded.

Key words: Namibia, Erongo Mountains, Omandumba Rock Art and Landscape

RÉSUMÉ

Les travaux de recherche sur l'art pariétal namibien, menés avant l'indépendance et depuis lors, se sont focalisés sur trois ensembles de massifs de Namibie Centrale : le Brandberg, les massifs du Spitzkoppe et le site du patrimoine mondial de Twyfelfontein. Ces trois massifs sont riches des plus fortes concentrations d'art pariétal préhistorique enregistrées en Namibie. Mais une autre région cruciale pour l'art pariétal de la Namibie Centrale a souvent été oublié, n'ayant que trop peu été étudiée : les massifs de l'Erongo. L'étude de l'art pariétal présent sur les fermes d'Omandumba, situées dans les massifs de l'Erongo, vise à comparer sa distribution spatiale, avec celle des ensembles plus connus que sont le Brandberg, le Spitzkoppe et Twyfelfontein, permettant ainsi une meilleure compréhension du corpus de l'art pariétal de la Namibie Centrale.

Dans ce la thèse envisage une approche contextuelle de l'étude de la relation liant l'art pariétal à son environnement, son paysage. Distribution spatiale, public potentiel, accessibilité, élévation, proximité de point d'eau et de gibiers, aspect, orientation, emplacement et visibilité des sites d'art pariétal au sein des paysages dont ils font partis sont autant de variables considérées dans cette approche du paysage afin d'établir les fonctions potentielles des différents sites d'art pariétal considérés. Cette étude se situe au cœur d'un réseau interdisciplinaire faisant dialoguer et interagir données archéologiques, bioarchéologiques, ethnographiques, ethno-historiques, géologiques, géographiques, paléoenvironnementales, et zooarchéologiques. Intégrées aux SIG, ces données ont apporté de nouvelles informations sur la distribution spatiale. Cette thèse étudie également les variables morphologiques des peintures et des gravures, ainsi que leur état de préservation. En plus des variables spatiales, la thèse a en outre étudié les aspects morphologiques des peintures et des gravures, et déterminé l'ensemble de leur état de préservation. La thèse tente également d'établir les sources et l'origine géographique des matières premières utilisées dans la production de peintures. Ces ont été extraites de trois contextes à savoir: séquences archéologiques, géologiques et par le biais d'analyses in situ des pigments de peinture des sites. L'ordre chronologique des séquences de figures peintes a également été établi.

Les données contextuelles utilisées dans cette étude ont été collectées au cours de campagnes de prospections et de documentations systématiques en 2014/16 des sites d'art pariétal situés dans les fermes d'Omandumba Est et Ouest, massif de l'Erongo, Namibie. L'étude repose sur une soixantaine de sites de peintures contenant 70 panneaux, ainsi qu'un site de gravures regroupant 50 panneaux ornés.

Mots Clés: Namibie, Les massifs de l'Erongo, Omandumba, Arte Rupestre et Paysage.

RESUMO

Muita da investigação sobre a arte em arte rupestre na Namíbia tem incidido sobre a Brandberg, Spitzkoppe e Twyfelfontein e montanhas. Estes são nacionais e sítios de Património Mundial na central a Namíbia, onde se registou a maior densidade de sítios de arte rupestre pré-histórica. Dado que muito pouca atenção tem sido dada a uma outra zona chave de arte rupestre na Namíbia central, as montanhas de Erongo, os objetivos da presente investigação em arte rupestre são os de estabelecer se a distribuição espacial da arte rupestre de Omandumba tem uma densidade comparável à de outros locais bem documentados, a fim de compreender o atual corpus de conhecimentos sobre a arte rupestre centro da Namíbia.

Para atingir estes objetivos, a dissertação aplicou uma abordagem contextual ao estudo da arte rupestre na relação com a paisagem. A abordagem paisagística da arte rupestre reconsiderou variáveis referentes aos sítios, nomeadamente a distribuição espacial, a possível audiência, a acessibilidade, o relevo, a proximidade de fontes de água e trilhos de animais, a perspetiva/orientação, a localização e sua visibilidade na paisagem, a fim de estabelecer suas possíveis funcionalidades. É central no estudo sobre a arte rupestre e a paisagem um enquadramento interdisciplinar onde dados obtidos da arqueologia, da bio arqueologia, da etnografia, de informações etnohistóricas, da geologia, da geografia, do paleo-ambiente, dos SIG e da zooarqueologia foram aplicados para investigar os locais de arte rupestre na relação com os seus contextos, para melhor compreender a sua distribuição espacial. Além das variáveis espaciais, este estudo considerou as variáveis morfológicas tanto das pinturas como das gravuras, e determinou seu estado geral de preservação. O estudo foi também estabelecido as fontes e origem geográfica das matérias-primas utilizadas na produção de pinturas na rocha. Estes foram extraídos de três contextos nomeadamente: sequências de sítios arqueológicos, geológicas e por meio de análises insitu de pigmentos de pintura rupestre adequados sites. A ordem cronológica das sequências de números pintados também foi estabelecida

As coleções de dados contextuais para este estudo foram recolhidas através de prospecções sistemáticas e documentação de arte rupestre, nas campanhas de campo de 2014/15 nas quintas de Omandumba Leste e Oeste, nas montanhas Erongo na Namíbia. Aqui, cerca de 60 sítios pintados, contendo 70 painéis de pinturas, foram registados, para além de um sítio com gravuras rupestres, contendo 50 painéis gravados.

Palavras-chave: Namíbia, Erongo Montanhas, Omandumba, Arte Rupestre e Paisagem.

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ABBREVIATIONS

FTIR	Fourier Transforms Infrared Spectroscopy
GSN	Geological Survey of Namibia
LGM	Late Glacial Maximum
LSA	Late Stone Age
MLRN	Ministry of Land and Resettlement in Namibia
MNHN	Museum National D'Histoire Naturelle
MSA	Middle Stone Age
NMN	National Museum of Namibia
NHA	National Heritage Act of Namibia
NHC	National Heritage Council of Namibia
SLM	San Living Museum
OEF	Omandumba East Farm
OWF	Omandumba West farm
UNAM	University of Namibia
UTAD	University of Tras-os Montes and Alto Douro
XRF	X-ray Fluorescence
XRD	X-ray Powder Diffraction

GLOSSARY

Adjacent:	A situation whereby two panels face each other
Anthropomorphs:	Suggestive of figures resembling human form
Element:	One component of a composite figure
Engraving:	See page 68 for definition
Artefact:	An object that has been modified, produced or even just used by humans or hominoids, usually but not necessarily portable.
Assemblage:	A group of artefacts archaeologists consider a single analytical unit
Attributes:	A specific variable of rock art, i.e., size, inclination, colour or type
Biochrome:	A pictograph executed in two different colours
Chronology:	The arrangement of past events or manifestations according to their temporal
Cluster:	A configuration of rock art elements/figures occurring on the same panel together
Complex:	In this thesis, a complex refers to the geological area where a group of rock art sites are in close geographical proximity
Conservation:	The practice of preserving rock art from natural or anthropic deterioration by means of specific measures.
Context:	The circumstances in which a particular event occurs, and these may be crucial in archaeological interpretations of it.
Dating:	The scientific methods of measuring the age of artefact or rock art
Exfoliation:	A form of geological weathering involving the progressive detachment of cutaneous flakes or scales from a rock surfaces
Indeterminate:	Refers to the figures that could not be easily identified and classified on account of a lack of identifiable biological features, shape or form
Figure:	A design or pattern painted or engraved on a rock surface by humans
Ochre:	An earthly mineral oxide or hydroxide of iron in red, brown or yellow colours; usually, the most surviving pigment of the pictographs
Orientation:	The position of rock art figures or panel/site relative to specific referents
Panel:	A panel is a section of a rock that has rock art figures on one side or on more than one side of the boulder
Pigment:	A colouring substance used to produce pictograph i.e. rock paintings
Region:	A larger geographical/political administrative unit or a large defined area such as the Erongo region where Omandumba Farms are located.
Rivier:	Indicating a dry river
Rock Art:	See definition in the body of the thesis
Rock art area:	In this thesis, the 'area' refers to the geographically defined land (private/farm) where the rock art sites are found i.e. Omandumba East and West Farms.
Rock Shelter:	A concavity of a rock wall, formed by one or more natural process, most commonly erosion; it is usually wider than deeper
Sediments:	An aggregate of grains or debris disturbed by human
Sequence:	A chronological succession of rock art figures, genres or tradition
Site:	A rock art site could be any painted or engraved rock surfaces i.e. a boulder, a panel or several panels defined to belong to the same site. Most often the sites are given name by the local place name while those

without names are given numbers. The rock art site is divided from other sites through geographical distance. Often an area is given a site name and adjacent rock art is named by the same site name but given individual panel numbering. This is common in the large rock art areas.

- Superimposition: An instance where one of the rock art figure having been placed over another, earlier figure.
- Technique: The method of execution such as paintings or engraving
- Therianthrope: A biomorph possessing both human and animal features
- Typology: The classification of a series of figures that are thought to belong to a single tradition.
- Vandalism: The defacing or destruction of rock art or the impairment of its scientific potential by human.
- Zoomorph: An object or figure providing adequate visual information to be recognized as resembling an animal form.

1.INTRODUCTION AND BACKGROUND TO THE STUDY

1.1.BACKGROUND

...One does not fully understand prehistoric rock art sites if one has not fully understand the space around it. From understanding of all small spatial units (the sites), grows the understanding of the entire landscapes as the spaces for life and use resources, that is, the life world...

(Schurtz & Luckmann, 1975, cf. Lennsen-Erz: 2008:34)

Given that it is one of the common forms of expressions among prehistoric peoples, rock art (paintings or engravings) is widespread on every continent, with the exception of Antarctica. Rock art is commonly found in different physical and social and cultural contexts, but in general it retains something of its original configuration. Its spatial distribution, placement and variability within a given landscape are often determined by various factors. These factors include geology, the environment, fauna, demographics and social patterns (MCDONALD 2006:71). Contexts are therefore fundamental in rock art as it is they that consistently define the cultural significance of rock art throughout the world. Contexts reflect on how prehistoric people conceptualized their surroundings, in the sense that space became not only a “place” (on account of the importance attached to it), but because it was also the “world” that was inhabited by the people who had produced that rock art. In reality, the landscape belonged only to the human who resided there. That human was and remains the only true craftsman.

Africa is said to be the continent with the largest concentrations of prehistoric rock art sites and diversified rock art traditions (COULSON & CAMPBELL 2001). The majority of these are principally found in Southern Africa (Ibid 2001). At the present moment, the oldest date for rock art comes from Africa, at Blombos cave, South Africa recovered from archaeological sequence 75,000-100,000 years ago (HENSHILWOOD et al., 2009) while current studies still indicate that the oldest date came from Apollo 11 cave in Namibia dated between 31, 100 and 32900 cal. (VOGELSANG et al., 2010).

Like elsewhere in the Southern Africa and the world in general, rock art contexts in Namibia varies. Its distribution and concentration is virtually governed by geology or the availability of suitable rock surfaces, as well as faunal distributional or natural resources (food, water, shelter). Its placement in the landscape varies from open-air cave shelters, to ceilings, cliff faces, rock overhangs, pavements, riverbed. In the form of mobilier art, it appears as figures on stone slab and non-rock media. The techniques, content and themes employed in the production of rock art in Namibia has largely been influenced by the geology, geomorphology, the wider environmental context and the belief systems of the hunter-gatherers, the herders and possibly the Iron Age agriculturalists who are believed to have authored this rock art (VIERECK et al., 1957; BREUIL 1960; SCHERZ, 1970, 1975, 1986; WENDT 1974; WADLEY 1979; LENSSEN-ERZ, 1997,2001; KINAHAN 1990, 1999, 2001A, 2004, 2010, 2011; RICHTER and VOGELSANG, 2008; RICHTER 2002; OUZMAN 2002, 2010; BREUNIG, 2003, 2014; GWASIRA 1998, 2010, 2012 etc.). They have also been influenced, more generally, by southern African rock art (see ANATI 1986; DEACON 1997; HALL & SMITH, 2000; LEWIS-WILLIAMS 1983, 1989, 1990,1996; COULSON & CAMPBELL 2001).

Namibia principal sites of highest concentrations is found in the Dâureb/ Brandberg Mountains that harbours about 1,000 rock art sites containing nearly 50,000 rock paintings and few engravings (LENSSSEN-ERZ 2007; GWASIRA 2011) most of which have been published in (PAGER 1989- 2006); followed by those found in the Erongo Mountains and its adjacent areas accounts closely to 5300 figures found at more than 80 rock art sites (BREUIL 1960; SCHERZ 1986; BÖRNER 2013; NANKELA 2016 {current research}) as well as the Namibia's first UNESCO World heritage Site of Twyfelfontein and its adjacent areas with more than 5,100 figures (VIERECK et al., 1957; SCHERZ 1975). While the lowest number of recorded sites are found in the Spitzkoppe Mountain in central Namibia (KINAHAN 1990) and Southern Namibia respectively (WENDT 1976). Hence the country's current heritage database holds an excess of approximately 62,000 individual figures of both paintings and engravings found at more 1200 sites countrywide (NANKELA 2015). Namibian rock arts, several themes, techniques and some content are persistently widespread to indicate a broad geographical and temporal continuity as well as persistence in the belief systems of their authors. Traditionally, there are two categories of rock art: those that are painted or drawn using either the fingers or a brush (these are often referred to as "pictographs" or "paintings");

those that are pecked, incised, scratched, stencilled or printed onto rock surfaces - are commonly referred to as “engravings”. These are the terms we will be using in this thesis.

Much of the research on rock art around the world centred on discussions about the ‘meaning’ of rock art. Several interpretations have been proposed to account for the proliferation of these prehistoric arts. Today, there is some consensus about the nature of rock art. Most believe that prehistoric art has more than one meaning and that the represented images mean something more than what appears to have been depicted. Thus prehistoric art was not just “art for art’s sake” or “l’art pour l’art” as it had been suggested in the 19th century (BAHN, 1998). For instance, in southern Africa, decades of extensive rock art research backed by a handful of approaches and interpretations (BLEEK & LLOYD 1911; LEWIS-WILLIAMS 1980-83; CULSON & CAMPBELL 2001; LEWIS-WILLIAMS & DOWSON 1989; SMITH 1995; SMITH & OUZMAN 2002, 2004 etc.) led to the identification of three major rock art traditions, namely, the Stone Age hunter-gatherers - San Foragers, Stone Age herders - Khoekhoen Herders and the Iron Age agriculturalists - Bantu-speaking communities.

These traditions had distinct regional styles and content, production although there was also an overlap between these traditions. For example, the artwork of hunter-gatherers gives us an insight into the symbolic or graphic expressions within this tradition. It also provides us with a deeper cultural meaning and context of rock art. By giving us an understanding the states of consciousness and its role in the shamanism, an idea developed by researchers David Lewis-Williams and Thomas Dowson (LEWIS-WILLIAMS & DOWSON 1988). Furthermore, the authors’ neuropsychological (N-P) model suggests that geometric and representational elements in rock art embodied the subjective entoptic phenomena that were drawn or painted. In a state of trance, we have come to see how this accounts for the universality of many rock art elements (LEWIS-WILLIAMS & DOWSON 1988:202; WHITLEY 2000:106, 2011:139). Lewis-Williams and Dowson drew their conclusions from the ethnographic sources to in order to recreate the rituals and beliefs of the San who had produced rock art in the Drakensberg. The shamanistic interpretation by Lewis-Williams and Dowson provides some unparalleled insight into themes within this tradition. The authors had argued that the creation of certain artworks was greatly influenced by the wider perceptions of hunter-gatherers towards their social life, their interactions with non-human animals and rock surfaces. For instance, Lewis-Williams noted that the representation of animals such as the eland functioned as symbols with multiple meanings.

(LEWIS-WILLIAMS & DOWSON 1988) proposed a relationship between altered states of consciousness (ASC) and the entoptic geometric images generated by the human nervous and optical system. There are some weaknesses to this theory, namely, the fact that there is little direct link between the ethnography of the 19-20th centuries and rock art, and such ethnographical records were harvested from regions where there is little or no rock art (MAGGS, 1998:13), or the fact that no ethnographical enquiries were made before the gradual disappearance of hunter-gatherers. However, the shamanistic theory and neuropsychological (N-P) model are well accepted in the academic realm “as a formal analytical tool whose purpose is to determine whether a corpus of rock art portrays hallucinatory imagery” (WHITLEY 2011:138). The N-P model is concerned with the origin of the art and not its meaning (WHITLEY 2011:138). In Namibia, detailed investigations of rock art have similarly made use of this explanation that was used in other parts of southern Africa (LEWIS-WILLIAMS 1982; LEWIS-WILLIAMS & DOWSON 1989). The idea is that Namibian rock art belonged to a regional cognitive tradition (KINAHAN, 2001a & 2005; GWASIRA 2002). This is explainable by the fact that the original authors of this art lived in regions and territories in southern Africa that no longer exist. Therefore, it is very difficult if not impossible, for the non-rock-art-producing audience outside the cultures of its original authors to accurately interpret this art or even understand its true meanings, its cosmologies and the motivation behind its creation.

Rock art studies have increasingly embraced a contextual approach that includes multiple lines of inquiries that incorporates both formal and informal approaches (CHIPPINDALE & TAÇON 1998b). This is done by applying knowledge gained through ethnographical analogies obtained from the descendants of people who had authored that rock art (LEWIS-WILLIAMS 1995; LEWIS-WILLIAMS & DOWSON 1988; WHITLEY 2000, 2011; GILLETTE 2011), by applying landscape approaches of rock art studies where Geographic Information Systems (GIS) and 3-D imaging (WRIGHT et al. 1997:357) are utilized in order to digitize maps and generally provide other graphical representations through manipulation and portrayal of spatial information (ASHMORE & KNAPP 1999; WYLIE 2007), and by applying phenomenological approaches to landscape studies that Tim Ingold referred to as the “dwelling perspective”, (INGOLD 1993:456) in which both environment and culture are simultaneously part of the complete embodied experience of dwelling in the world.

Furthermore, studying rock art sites in the context of their landscape help us understand the forager's perception of that landscape (OUZMAN 1998). Ultimately, this helps us to understand the human decisions that led people to create certain figures in particular locations within the landscape (LENSSEN-ERZ 2004). This brings this in line with the idea of a *Gestaltung*, expressed as the “physical acts which bring about tangible change on a landscape endowed with meaning”, as well as other evidence from archaeological, paleoenvironmental, and taphonomical investigations in relations to rock art (WENDT 1974; WADLEY 1979; BREUNIG 2003 cf. RICHTER et al., 2008; KINAHAN 1989, 1990, 2003a; B; RICHTER & VOGELSANG 2008:37; ROBERTS 2010; PLEURDEAU et al., 2012; MVIMI 2013) in order to understand the complexities and fluidity of human origin.

The scientific bearings of contextual archaeology as well as the geological formations that had been chosen as the canvas for rock art in sites allows the identification of rock types (be they engraved or painted) to be distinguished from natural features, and provides a basis for assessing both the current condition and the identification of potential threats to the rock surface (DURÁN 2014). Therefore, within this thesis, we equally expand our understandings and will embrace the landscape contextual approach to rock art in relation to its natural environments. After all, (SCHURTZ & LUCKMANN 1975) had pointed out, to understand prehistoric sites, we need to firstly understand their localities. With the landscape enquiry being the backdrop of this thesis, the study considers the location of sites, their placements on rock surfaces, their mobility patterns, the proximity of natural resources (water sources, shelters and distribution of game), the topographical features investigations of these sites (elevation and so forth). Landscape approaches to rock art research, furthermore, emphasizes the relationship between the choice of figures and the location of these figures in the landscape, the possible intended audience of these figures, the culture of this audience cultural and its integration in the wider patterns of settlement.

The thesis examines 60 recorded rock painting sites (n=60) containing 70 rock painted panels and an additional rock-engraving site (n=1) containing 50 engraved panels. These are located in the Omandumba East Farm (OEF) and Omandumba West Farm (OWF) in Erongo region in the Erongo Mountains. These panels were subjected to qualitative, spatial, statistical, and scientific analyses. My hypothesis that the choice of location of the rock art sites in this cultural landscape was the result of a deliberate choice rather than random actions. To test this

hypothesis, I have two main research questions. Following from these questions are general and their specific supporting objective

1.2. Research Questions

1. Were rock art sites chosen randomly or was it deliberate actions? Can we detect the emergence of certain patterns of distribution? Can the distribution of the sites, together with other archaeological features, help to identify the functionality of the sites?
2. Why was the rock art drawn or painted in specific places or location in the landscape (or why it was not)? Is there a spatial relationship among between the choice of figures and their location in the geographical context?

1.3. Research Objectives

Rock art like any other remnants of the archaeological record is recognised as it occurs in its cultural contexts. I intent to interrogate the landscape approach by providing an alternative way to understand the placement of rock art in the landscape. Furthermore, the thesis will attempt emphasize that, conceivably, rock art is not only a representation of the cosmological and belief systems of hunter-gatherers, herders and/or later farming communities but also reflects the knowledge of the land/territory which was manifested as those ‘memoryscapes’ in the rocks which reflected the how the cosmological and real worlds of those artists were combined A combination of cultural richness and the scientific potential of the Erongo Mountains, as well as the repeated archaeological investigations in the area over the years, have reinforced the view that the cultural landscape of the Erongo Mountains is indeed of global importance and for that reason required a comprehensive study. This study requires the following research general and specific objectives:

General objectives:

- To investigate the spatial distribution of engraved and painted rock art sites in the Omandumba farms;
- To develop an empirically based research enquiry method employing data from an interdisciplinary framework (archaeology, bioarchaeology, ethnography or ethno-

historic information, geology, geography, paleoenvironment, GIS and zooarchaeology etc.) to investigate the rock art sites in relations to their contexts.

- To establish a chronological framework of human occupation of the rock art sites of the Omandumba farms in relation to the regional heritage archaeology;
- To identify issues affecting the conservation and management of the rock art sites of the Omandumba farms and to suggest conservation and management measures to alleviate the problems and monitor the rate of deteriorations
- To disseminate the research results through a variety of means – academic papers, books, website, public exhibitions etc.;
- To encourage the legal proclamation of the rock art sites at the Omandumba farms as National Heritage sites inscribed into the National Heritage Database of all the rock art sites in Namibia and to develop a management and conservation plan for the farms, as they are already open to tourists.

Specific objectives:

- To conduct a systematic survey of and document the rock art sites in Omandumba East and West Farms, their contexts, distribution, and their associated archaeological and landscape attributes;
- To examine rock art in relation to landscapes, namely, analyse its distribution and placement, and establish their possible functionalities;
- To establish the sources of the raw materials and identify the sequences (if any) of painted figures by means of pigment analysis in order to establish the chronology of this rock art;
- To establish a chronological framework for the occupation of the rock art sites by means of archaeological data from previous and current archaeological investigations of rock art sites within in the Omandumba farms;
- To establish the current state of conservations of the rock art sites to inform discussion of the future conservation and management of the sites.

1.4. Significance of the Study

Much of Namibia's rock art pre-independent and current researches have concentrated predominantly in the Brandberg, Spitzkoppe Mountains and Twyfelfontein World heritage sites of central Namibia where the largest prehistoric rock art sites attributed to hunter gatherers, herders have been recorded. Erongo Mountains' rock arts had received very little attention with only few researchers such as Abbé Breuil (BREUIL 1957, 1960) Ernst Rudolf Scherz (SCHERZ 1986) and few others who have documented few rock-painting sites in some Erongo farms. Hence, it is hoped that this study will establish whether the distribution of Omandumba rock art had a density comparable to other well-researched sites in Central Namibia in order to understand the existing body of knowledge of rock art in Namibia in particular, and the Southern Africa in general. In addition, it is hoped that with this baseline recording of rock art, the Omandumba farms will have potential for declaration into the list of Namibia's National Protected Sites as per the National Heritage Act No. 27 of 2004.

1.5. Thematic Structure of the Thesis

This thesis examines the rock of Omandumba farms by means of a multifaceted contextual approach. Overall, the thesis provides seven chapters as well as an appendix of a recording form that might be applicable to any rock art-recording project. The current **chapter one** introduced the dissertation and highlighted background information about rock art studies across Southern Africa, the globe and Namibia. It also highlights the research hypothesis, objectives and the significance of the research. **Chapter 2** gives a comprehensive coverage of environmental and geographical contexts of Erongo Mountains in relation to the local geology, geography, climate, flora and fauna as well as the current land use within Erongo Mountains. Furthermore, the second chapter also provides brief information about Omandumba East and West farms.

Chapter 3 considers a contextual overview of the Erongo regional paleoenvironment in which prehistoric people of the Central Namib lived and how they responded to climatic variability and environmental shifts from Late/Pleistocene to Holocene period. The archaeological context addresses the Middle Stone and Late Stone Age periods of human occupations in relation to the general distribution archaeological sites in Namibia, notably those archaeological sites that are globally important. I also consider the chronological

sequence of the Erongo. Finally, the chapter will provide a brief history and development of rock art research in Erongo Mountains, as well as some of the key challenges affecting archaeological research in Erongo and generally Namibia.

Chapter 4 covers the theoretical definitions of rock art, the types of rock and the techniques used to make it, as well as a brief discussion about debate regarding rock art terminology. It further offers a comprehensive understanding of the variety of contexts in which rock art sites are found and used. The last section of this chapter includes discussions about the locations of rock art and where they are found. Here, the chapter draws on theoretical perspectives about the rock art in relation to its contextual landscape. Central to these discussions is how the landscape has been studied in relation to rock art. A multidisciplinary approach has been adopted, where data from archaeology, ethnography and geology are employed to get a better understanding of the relation between rock art and the landscape. **Chapter 5** outlines the methodologies used in the collection of contextual data pertinent to our thesis' objectives, particularly (a) the landscape settings of the sites and (b) the analysis of painted and engraved rock surfaces, the study of the art, its contextualization and their state of conservation.

Chapter 6 details the results of our analysis of the rock art Omandumba West and East farms. The chapter is divided into three sections. Section A presents the results for rock paintings sites. Here, qualitative and quantitative analysis, spatial, statistical and scientific analysis techniques have been used. The qualitative and quantitative analysis provides a general description of the rock art, notably sites: the landscape attributes; the site morphology and panel content; the frequency of elements frequency and conservation variables. Each of these variables can be broken down into further additional components. For instance, the landscape variables determine the relationship between rock art sites and attributes of pertaining to their physical configurations (elevation and aspect/orientation, accessibility, the proximity to natural resources and trails, the visibility of rock art sites or the visibility of artworks). A spatial density analysis reveals the clustering of rock art sites in each locality, their accessibility, their visibility in and accessibility to wider natural landscape. The site morphology and panel content variables encompass the site's physical and geological settings and its placement in the landscape in the form of open-air cave shelters, boulders, ceilings, cliff faces, rock overhangs and riverbeds. The site/panel content includes techniques used in the productions of the rock art, elements type, pigment colours used and elements represented. I then use the element frequency represented at each panel of each rock art site to evaluate the

frequency of these elements. Under the conservation variables, I outline the current state of conservation of the site and its content, and I identify both anthropic and biological threats affecting the rock art sites.

Section B provides analyses of the rock engravings, applying similar enquiry methods used in rock paintings.

Section C offers a scientific analysis of the pigments samples collected from some of the rock painting sites in the Omandumba farms. Here, a wide range of scientific techniques for the characterizing pigments was used, including the use of scanning electron microscopy (SEM), X-ray diffraction (XRD) and the X-ray fluorescence (XRF). Such analyses provide information about the source and the origin of the pigments used in the production of the rock paintings in our study areas.

Chapter 7 presents critical review of the research findings in order to address the research questions and objectives. Discussions include interpreting the findings in form of: chronology of the artworks based on rock art tradition presented in the study i.e. techniques of production, stylist and ethnographic interpretations associated with artworks depictions in the study. In order to understand the distributions of sites in the study, their possible functions and the intensity of painting and engraving activities; discussions about spatial units in order to hypothesize how the landscape was organized and used are also presented. The chapter also provides management recommendations for rock art sites, with special focus on the proclamation of the area as a Namibia heritage area to be protected in terms of the National Heritage Act no 27 of 2007. Thus, I suggest the continuous monitoring; the introduction of conservation efforts and regulation of tourism activities, and ways to combine indigenous perspectives with management strategies.

2.ENVIRONMENT AND GEOGRAPHIC CONTEXT OF ERONGO MOUNTAINS

Namibia's landscapes and geomorphological features have been inherited from a long and complex geological history spanning from 120-135ma when Gondwana began to split from South America and South Africa (GOUDIE & VILES, 2015:27). This period, followed by the intensive tectonic and volcanic activities (100-65ma defined the country's present geomorphology; there are uplifts that occurred as a result of eruption of Etendeka flood basalts and erosion activities resulting in the displayed quantities of boulders, shelters, and caves used by humans during prehistoric times from Middle Pleistocene until the period of rock art production.

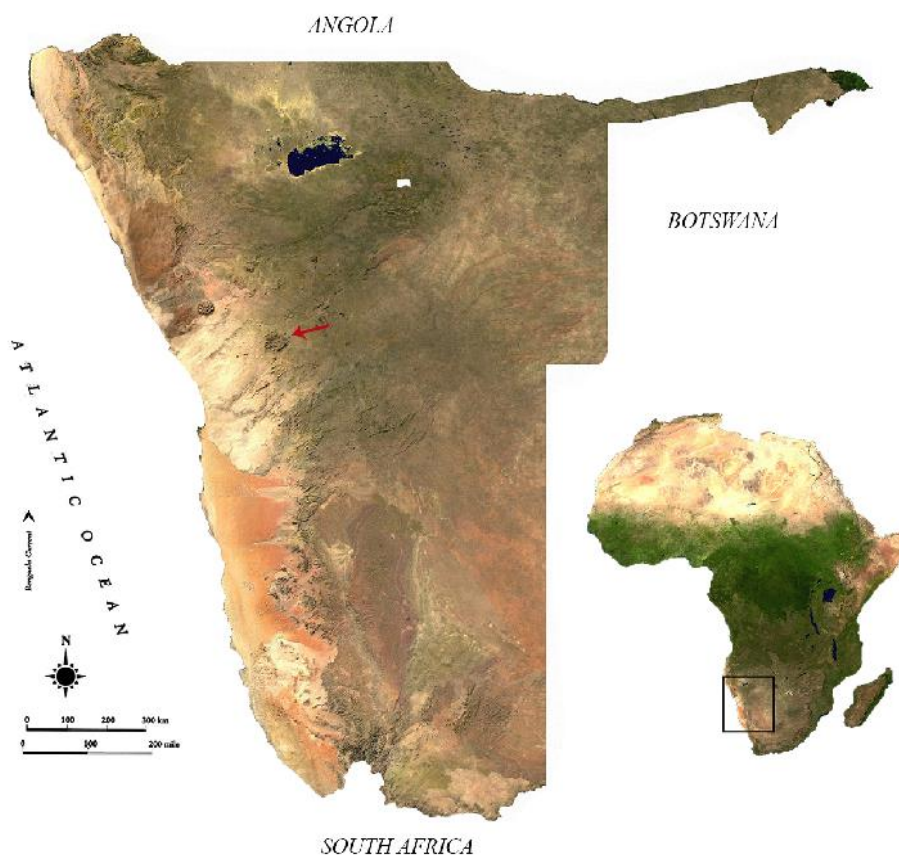


Figure 2.1 Satellite Map of Namibia indicating geomorphology features. The pointed arrow shows the location of Erongo Mountains in Central Namibia (©NASA)

Today, the country's western and central part, also "the Namib" define the area, stretching from Cape Cross in the Atlantic coastline to 350 km inland. There are distinct volcanic intrusions involving those formed by granite and these include Namibia's highest mountain,

the Brandberg (2,606m), as well as the Erongo Mountains (2,319m and the Spitzkoppe Mountain (1,784m) group (Fig. 2.1). There are the post-Karoo groups of the Etjo sandstones depositions of the Waterberg Plateau, Mount Etjo and Omatako, as well as a series of flat-topped mountains located further in north eastern Namibia on the edge of the Kalahari and some 60 km east of Otjiwarongo (GOUDIE & VILES, 2015:27-30). Various ephemeral rivers such as Kuiseb River, Swakop River and its tributary Khan River, Omaruru River and Ugab River run through the central Namib Desert into the Atlantic Ocean.

2.1. Geographical Context

The Erongo Mountains are geographically located in northwestern Namibia between 21°37'S and 15°40'E. They are found in the Erongo Region (Fig. 2.2 & Fig. 2.3). This prominent semi-circular mountain chain is characterised by mountain ranges, edges and vast plains that rises to some 1000m above the surrounding plains. Its highest peak is the 'Hohenstein' southwest section of the mountains and it attains its maximum altitude of 2319m. The mountain is one of the circular granitic massif landforms that dominate the flat bush-clad plains of the central Namib and it is situated 15km west of the town of Omaruru and it is about 175 km from the capital Windhoek.



Figure 2.2 Physical map of Erongo region showing the geographical location of Erongo Mountains (pointed arrow) in relation to other geographical features (credits: www.maphil.com).

This circular inselberg has a mean diameter of 35-40 km (HUSER 1977; BLUMEL et al., 1979) and stretches 20km west from the towns of Usakos and Karibib and Omaruru in the north while the Atlantic Ocean is about 160km west (Fig. 2.1). There are various routes into the mountains and are bounded by valleys and tributaries of the main Omaruru River, by rock-cut plains and by slopes at the foot of the massif. The mountains are inhabited. Today, almost the entire Erongo is on private farmland and it is part of the Erongo Mountain Nature Reserve (Fig. 2.2). The ephemeral Omaruru River flows past its northern extremities and supports ecosystems with different communities of plants and animals that are common to this part of Namibia. The geography, physiographic features and climate of the Erongo Mountains display dramatic diversity due to the fact that it lies within a transitional zone between the low-lying Namibia Desert and the central highland and the Mopani woodland.



Figure 2.3 Detailed 1:250,000 topographic Map of Erongo Mountains and its mountain peaks, rivers and other physiographic features including farm names within the Erongo Complex, (After, CAINCROSS & BAHMANN 2016)

2.2. Geological Context

Situated in the Omaruru Lineament Zone (Fig. 2.4), the Erongo Mountains (also known as Erongoberg or Mount Erongo) are one of the principal dome-shaped inselbergens of the central Namib, this in addition to other Damaraland granitic intrusions and complexes which include Brandberg Mountain and the Spitzkoppe in northwestern Namibia (Fig. 2.4 & 2.5). Geologically, Mount Erongo is the largest Cretaceous Damaran Complex and it dominates the Central Namib. It has attracted extensive research (see CLOOS, 1911, 1919; EMMERMANN et al., 1979; PIRAJNO, 1990; MILLER, 1983; PIRAJNO et al., 2000; TRUMBULL et al., 2000; MIGON & GOUDIE 2000; WIGAND et al., 2003). The origin of this largest composite and bimodal complex can be traced back to the volcanic activity that occurred during and after the break-up of Gondwanaland, ca. 120 -130ma and 65-100ma (WIGAND et al., 2003). It is located near to the southern margin of a belt of Jurassic to Cretaceous alkaline ring complexes, the latter extending from the coast to at least 350 km inland. Today, the Erongo Complex comprises a series of volcanic effusions of basalt and plutonic rocks such as granite (Ibid).

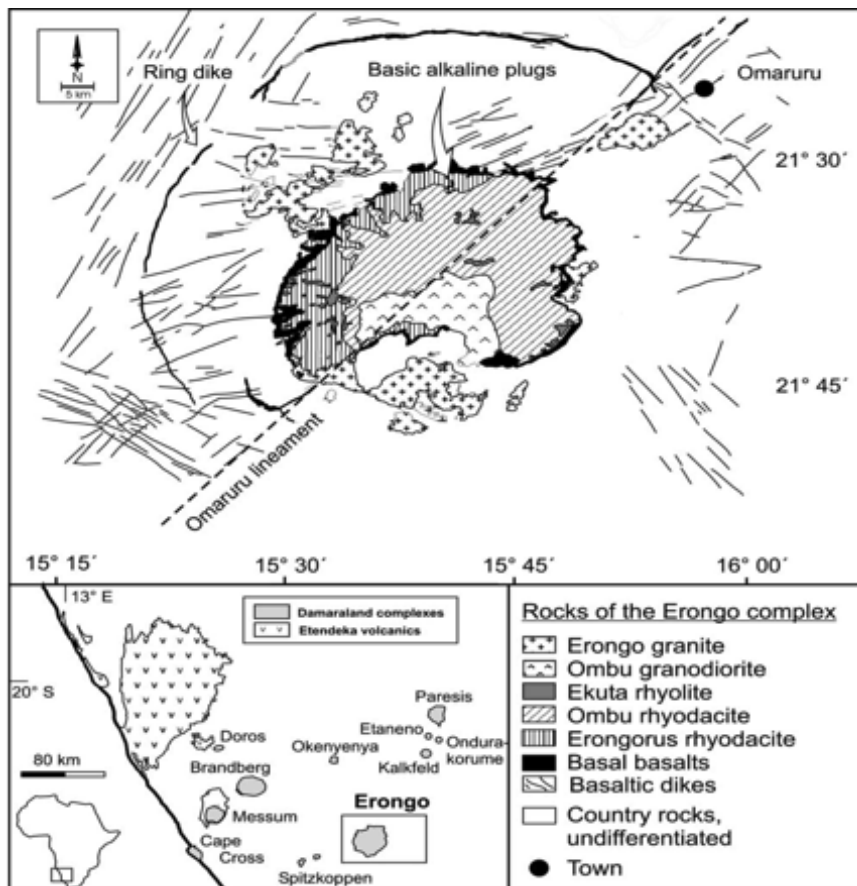


Figure 2.4 A simplified geological Map of Erongo Mountain adapted from MILNER, 1997. The insert indicates the location of Erongo complex in relation to adjacent complexes of Etendeka Group of north western Namibia.

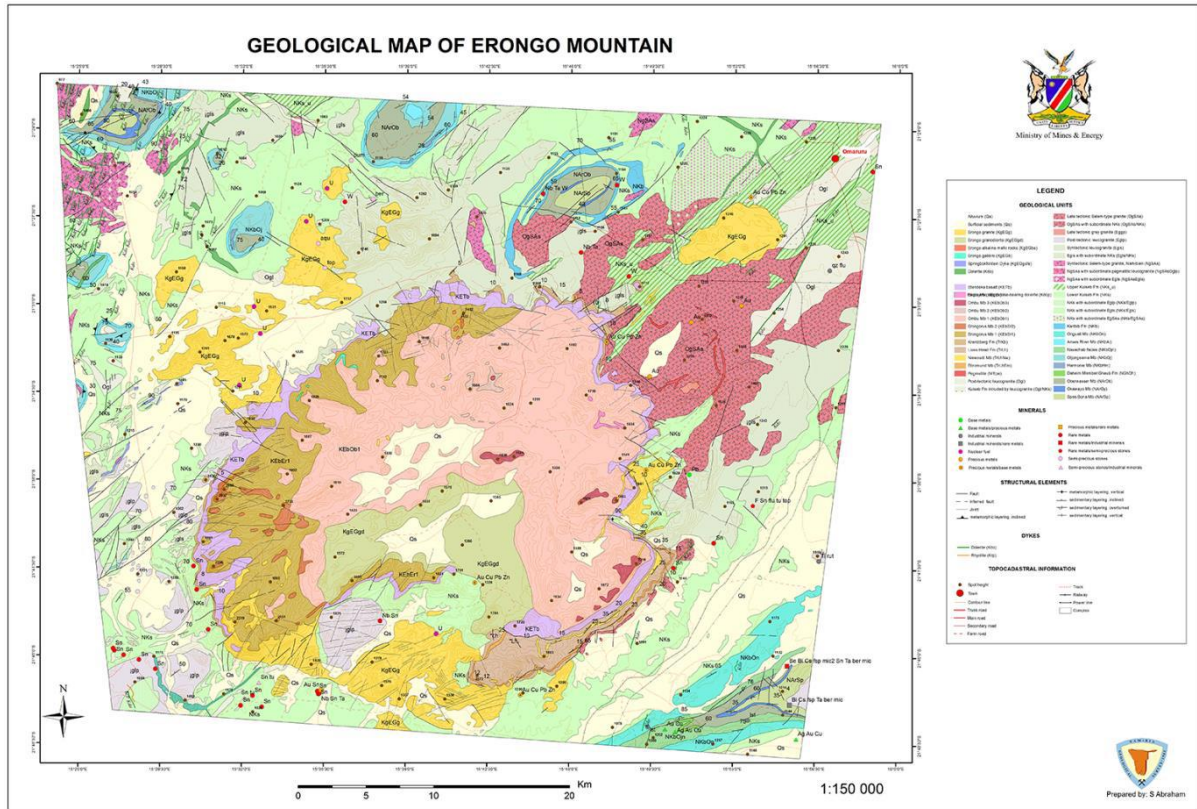


Figure 2.5 A geological Map of Erongo Complex outlining main geological units, ©Geological Survey of Namibia

There are three main morpho-structural units that characterize the complex. The first is the volcanic complex of about 30km in diameter made up of a central caldera structure. It consists of a layered sequence of volcanic rocks that form prominent eroded cliffs and hills rising several meters above the flat surroundings (MIGON & GOUDIE, 2000:17; PIRAJNO 1990). The second unit is the peripheral granite intrusion dispersed around the central massif, which formed as a result of cauldron subsidence.

Following this, the granitic rocks were passively replaced by the space provided by the subsidence (PIRAJNO 1990). The third unit consists of a prominent semi-circular ring of tholeiitic dolerite with 50 km in diameter (WIGAND et al., 2003). The base and the south-eastern part of the Erongo Complex are characterized by a series of flat-lying basaltic lava flows and pyroclastic rocks. These basal volcanic are exposed throughout the entire complex and may originally have had an even wider distribution (PIRAJNO 1990).

2.3. Geomorphological Context

The landscape of the Erongo Complex is characterised by various geomorphological features including diverse granitic boulders, open-air caves, granitic walls, rock overhangs, pediments, weathering pits, as well as extensive rock-cut plains that slope gently from the foot of the hills, ridges, kopjes and larger granitic outcrops (Fig. 2.6) which resulted from geological activities. Their shapes, sizes and heights vary but their surfaces are coated with brown protective crust susceptible to exfoliations and cracking. Most of these landforms are attributed to the period during the splitting of Gondwana (GOUDIE & ECKARDT 1999).

Extensive tracks of boulders of various sizes and shapes are predominant, sporadically distributed within the complex and exposed at the surface to various degrees. Although independent from hillslopes, larger outcrops and kopjes within the complex were formed as a result of weathering or slope failures (MIGON & GOUDIE 2000). Some are found resting on platforms at a high elevation such as kopjes, large hills or rock outcrops. In addition to boulders, open cave shelters are also frequent within this landscape. Some notable open cave shelters within Erongo are found in the big overhangs in the massive granite, i.e., Philip's Cave in Farm Ameib, Paula's Cave in the farm in Okapekaha and Ghost Cave in Omandumba East, while others are relatively small, i.e., Leopard Cave and Giraffe Cave in the farm in Omandumba West places which hosted the prehistoric inhabitants of this area. Most of these have similar morphologies but with different depths, size and heights.



Figure 2.6 Typical sceneries around the Erongo Mountains. View of valleys and kopje from Erongo Wilderness Lodge. Pictures taken in March 2015.

Other common surface features within the Erongo Complex are the rock overhangs, granitic walls and pediments. Overhangs are typically found on smooth rock walls surfaces with concave shapes forming either shelters or shallow caves while pediments are commonly found on grounds of smooth granites with rounded platforms or boulders placed on top. Rock overhang are also some of the common feature in Erongo Complex. Some of them forms cave shelters while others simply form shallow shelters.

2.4. Climate

Erongo Mountains lie on the fringe of Namib Desert. They are within a transitional zone between the semi Namib Desert to the west, the semi-arid savannah to the east, as well as the Central Highland and the Mopani woodland. This area receives between 200-300mm annual rainfalls (Fig. 2.7) during its annual cycles from December to April, while erratic/sporadic rain sometimes occurs in October and November (JACOBSON et al., 1995; MENDELSON et al., 2003).

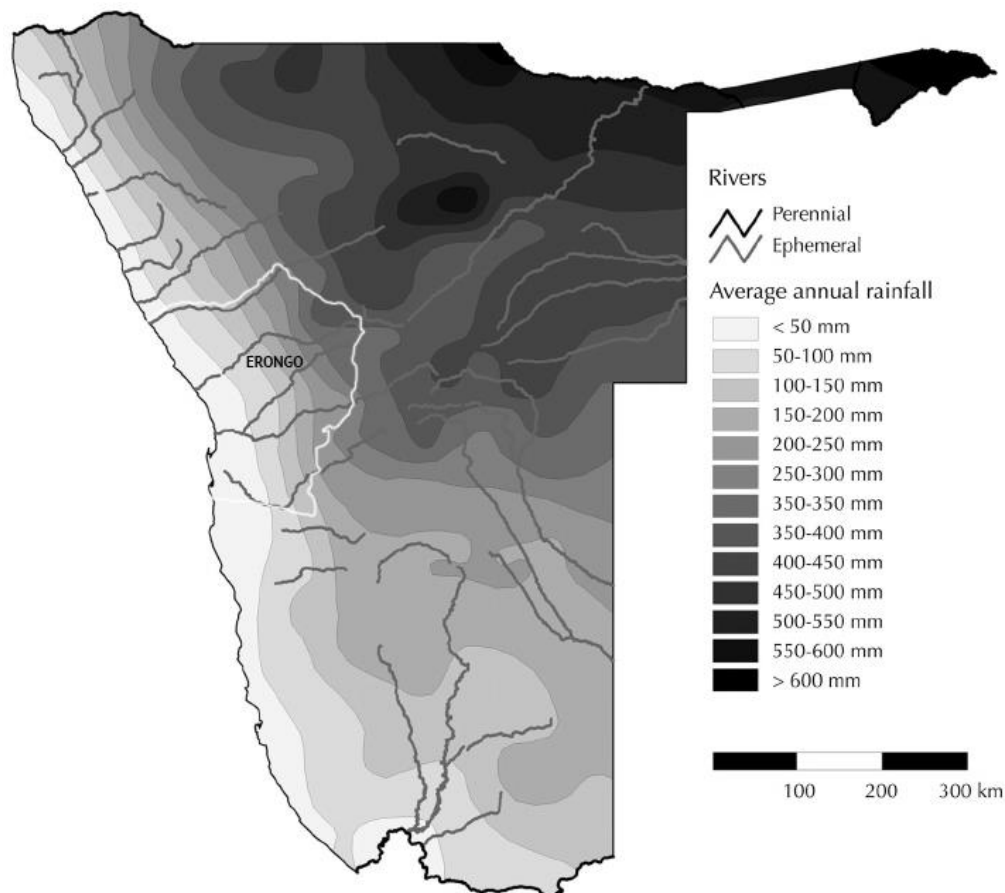


Figure 2.7 Map of Namibia indicating the average annual rainfall, (After, MARAIS et al., 2009:290). Map edited to reflect the location of Erongo in Namibia.



Figure 2.8 Fog over Omandumba Farms, picture taken in June of 2014. It brings important moisture into this area.

Coastal fog also frequently brings in moisture during the winter and summer periods (Fig. 2.8). This is the most important moisture source for the Namib biota (SEELY 1978), but it greatly contributes to rock weathering and mineral breakdown (GOUDIE 1972). Other inflows within the Erongo Complex are in the form of river tributaries from two main ephemeral rivers, the Omaruru North and the Khan River to the south of Erongo Complex connecting the hinterland to the coast. However, these rivers flow seasonally or as a result of flash floods, and for that reason do not retain water throughout the year. Groundwater water supplies are available in form of springs, underground seepages, lake and water holes in Erongo Complex. However, their reliability varies seasonally. Springs found within the basalt riverbed, i.e., in Omandumba East (engraving site), are one of the reliable water source that retains water almost until the next rainy season while those found in proximity to the granite hills or outcrops do not retain water for a long period due to high evaporation because most of them are fed by run-offs from granite and underground seepages (Fig. 2.10 and Fig. 2.11).



Figure 2.9. View of Omandumba Farms after good rains, picture taken in May 2015. View from Christian Shelter, Site OWF30.

The porous condition of the sandy grounds not only limits run-off but accounts for the scarcity of springs and bodies of water in general. Humidity within the Erongo Complex ranges between 40% to 50% during the rainy season and about 10% to 20% during winter months (June-July). Temperatures within Erongo are moderate in comparison with its immediately surrounding areas in the Namib Desert.



Figure 2.10 Omandumba West Farm. Water pool retaining water three month after rainy season. Picture taken in May 2015.



Figure 2.11 Omandumba West Farm. One of the underground seepage feeding the springs. Picture taken in June 2015.

The average annual temperature ranges from 8°C to 22°C in winter and 19°C- 38°C in summer (CAINCROSS & BAHMANN 2016). Day temperature is often very high in this area, but it eventually cools down at night. Wind regime includes prominent southerly and

south-westerly winds during the summer, and north-easterly winds in the winter that sometimes reaches the entire desert surface (see Fig. 2.12).

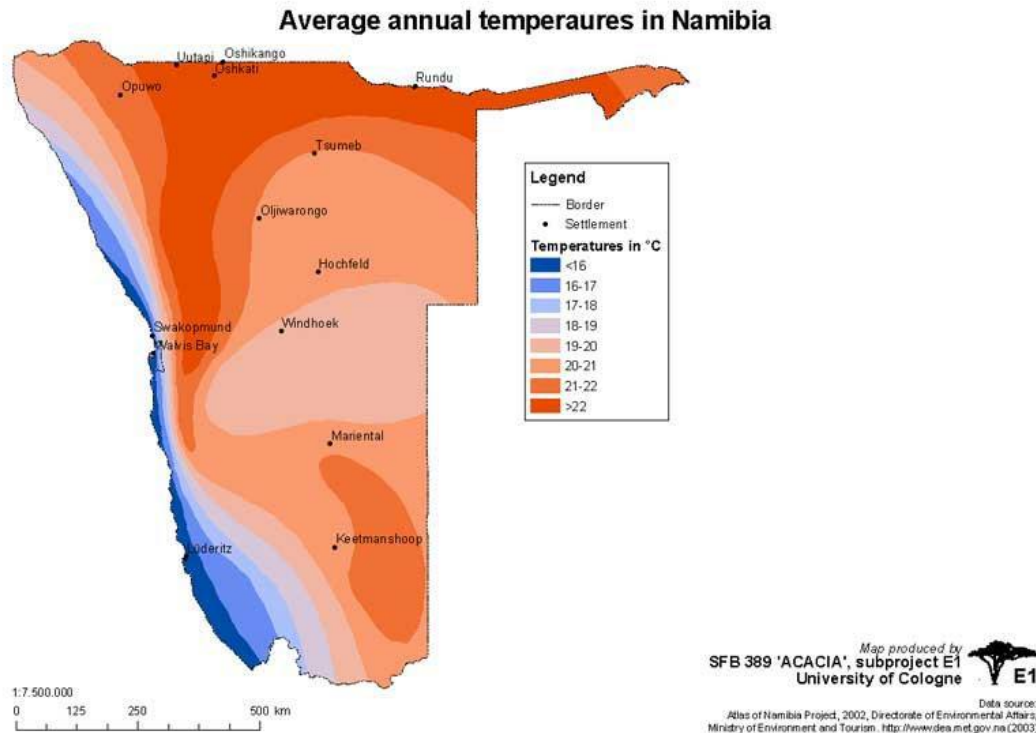


Figure 2.12 Map of Namibia indicating the average annual temperature. Map credits: ACACIA Project, University of Cologne, 2003).

2.5. Flora and Fauna

The distribution of floral and faunal communities within the Erongo Mountains is determined by rainfall as GIESS (1971:6) point it out. Since Mount Erongo is located within a transitional zone between the Namib Desert and the woodland, the area supports a rich diversity of flora and fauna. The eco-zone influencing the distribution of biotic communities includes the plains with savannah grassland, the granite kopjes and the woodland of the river courses (WADLEY 1979: 24-25). Various plant species including acacia and Euphorbia and Colophospermum (mopane trees) are very common in the semi-desert and savannah transitional steppe landscape such as the Erongo Mountain (GIESS 1971). *Cyphostemma currorii*, *Grewia flavescens* and *Welwitschia mirabilis* are also common. However, commiphora species are more confined to the hilly-slopes of volcanic basalt areas (Fig. 2.14) while species such as the *Acacia*, *Salvadora persica*, *Tamarix usneoides*, *Faidherbia albida* are found mainly in river courses and their immediate surfaces (Fig. 2.13). *Welwitschia mirabilis* grows in the gravel plains around the base of the Erongo complex while *Aloe dichotoma*, *Boscia Albitrunca* is

found predominantly on rocky granites kopjes (Fig. 2.15). There is a general absence of ethnographic records on the use of the wide range of plants by indigenous people within the Erongo Mountains.



Figure 2.13 Acacia species confined to riverbeds and valleys landscape, picture taken in May 2015.



Figure 2.14 Commiphora species found in basalt environment, Picture taken in May 2015.

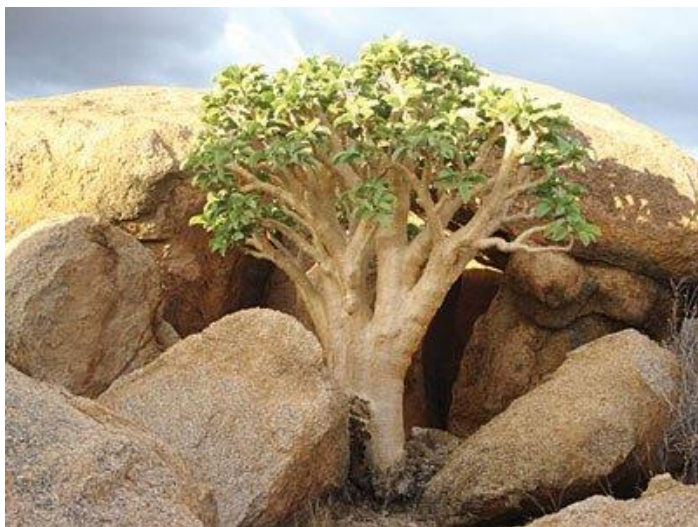


Figure 2.15 Cyphostemma currorii on Erongo granites, Picture taken in May 2015.

The local Ju/'hoasi San community who dwells in Omandumba West San Living Museum indicated the presence of medicinal plants species within Omandumba farms and these include *Acacia rioloba*, *Harpagophytum* locally known as the 'devil's claw', Euphorbia aloes and some plants from the *Ceropegia* genus. *Grewia flavescens* (sandpaper raisin) and *Searsiatenuinervis* are used for food. Aloe dichotomy (quiver tree) is used as raw material for making quivers, while *Acacia erioloba* (camel thorn) is widely used for firewood. The three eco-zones responsible for the distribution of the floral community within the Erongo Mountain are equally responsible for the distribution of faunal species, thus influencing hunting and gathering strategies. For instance, the plains vegetated mainly by grassland, *Cyperus fulgens* and acacia trees support mainly the grazing antelopes species (including oryx/gemsbok and springbok) and the territorial rhinos.

On the other hand, the river courses support mainly kudu, steenbok's klipspringers, dik diks, duickerbucks and giraffes (these latter ones also browse on several fruit trees and shrubs). The rocky hill-slopes largely support klipspringers, mountain zebras and dassies (WADLEY 1979:25). As a result of the increased wildlife conservation programs within the Erongo Mountains, a large number of antelopes such as oryxes, kudus, springboks, klipspringers, dik diks, duikers, steenbok and the rare black-faced impala are found in this area. In addition, large mammals such rhinos (black and white rhinos) and desert elephants are found in this area. Mountain zebras, giraffes and ostriches, warthogs, leopards also share this landscape (Fig. 2.16). Jackals, Löffelhund (spoon foxes or bat-eared foxes), brown hyenas, baboons, rock hyraxes eagles (black eagles and black-breasted snake eagles) and rock runners are increasingly found in the area.

Smaller animals such as insects, reptiles and rodents also thrive well in this area. These species display a variety of behavioural, morphological and physiological adaptations, which enable them to survive in this environment. The animals must have roamed freely during prehistoric time in this the territory while following perhaps natural features such as rivers (Khan and Omaruru Rivers). Nowadays, most of them are confined in Erongo Mountain Conservation Area and have restricted or controlled seasonal movements.



Figure 2.16 Some of the animal species found in Erongo Mountains today. From top to bottom: Giraffes, antelopes (kudu), a leopard and a rhino found in Omandumba farms and adjacent farm of Ai-Aiba. Bottom two images show other animal species found in Erongo Mountains today. From left are elephants in one of a riverbed of Erongo Mountains and to the right are mountain zebras, all found in the Erongo Conservation Area of Erongo Mountains.

2.6. Current land use system

Today, the entire the Erongo Mountains fall under a zone for commercial farming (Fig. 2.17) that is made up of approximately 30 farms that cover an area of 190 000ha. The arid nature of the landscape means that very little part of the area has agricultural potential. For that reason,

farmers are particularly engaged in extensive pastoral farming, and this is supplemented by the steady growth of tourism activities, and these include wildlife conservation programmes run through the Erongo Mountain Nature Conservancy and cultural heritage sites.

The Erongo Mountains are accessed through the main gravel road D2315 on the northern part of the Mountains from the town of Omaruru town, which connects it to the small village of Tubuis and ultimately to the coastal areas. The central part of the Erongo Mountains can be accessed through the D2315 gravel road. The landowners control access the mountain through these points. Most of the private farms in the Erongo Mountains contain archaeological sites, including two that have been proclaimed as archaeological heritage sites by the National Heritage Act, namely, Phillip Cave on the farm Ameib and Paula's Cave in Okapekaha farm. These sites generally survive solely on the responsibility of individual landowners, this is because of the severe shortage of heritage specialists both at the National Heritage Council (NHC) and the National Museum of Namibia (NMN).

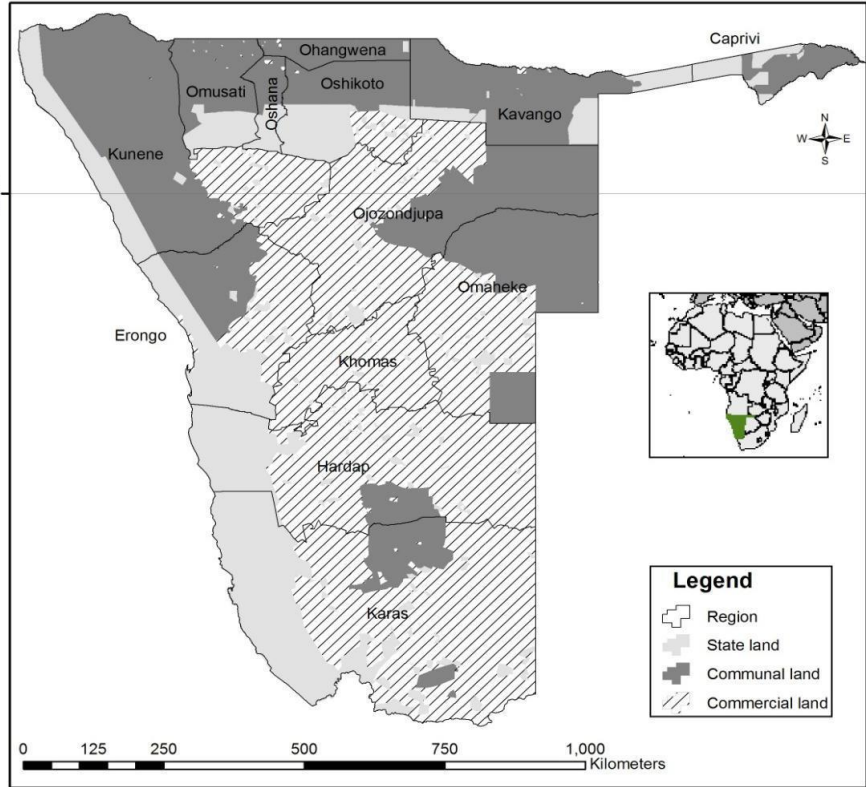


Figure 2.17 Map of Namibia, indicating areas of communal and commercial land. Source: (MEIJS 2008)

The regular monitoring of these sites is not usually carried out. But it is expected that the sites will receive the attention in 2017 onwards upon completion of the research in Omandumba farms. Equally, landowners are not always aware of the legislation and the mechanism for

protecting these heritage sites. As a rule, they do not always engage the NHC on the appropriate measures to protect and maintain the sites, especially before undertaking sites for tourism-related activities. Most of them are now open for public. Often, some of the sites are unsupervised and as a result, they have suffered from vandalism especially by illegal miners (semi-precious stones mining), trespassers, illegal hikers and unsupervised tourists (Fig 2.18 & Fig. 2.19). Furthermore, should landowners permit mining companies to develop mines on their private farmlands in the near future, the increase in mining exploration in the Erongo Region may also directly or indirectly affect the archaeological heritage in Erongo Mountains. Given the significance of these sites at both local and global level, this will be harmful to Namibia's heritage unless, scientific research is intensified and the entire mountains and its surrounding areas are protected as a National Conservation Area under the National Heritage Act No. 27 of 2004.



Figure 2.18 Minors illegally mining precious stones. The red arrows points to one of the holes found on a granite hill in Omandumba west farm.



Figure 2.19 Illegal miners camped under one of rock art site in Farm Ameib in Erongo Mountain.

2.7.Sites setting: Omandumba East & West Farms

The study areas are two private commercial farms, the Omandumba West Farm (OWF) owned by Mr. Harold Rust, and the Omandumba East Farm (OEF), owned by his young brother Mr. Dithelm Rust. The Omandumba farms are adjacent to each other and occupy a farming area of about 5,244 hectares on the northwest edge of the Erongo Mountains is located 45km west of the town of Omaruru (Fig. 2.20). Today, the Erongo Complex falls under the Erongo Mountain Nature Conservancy, an area that includes 30 farms that cover and areas of 190 000ha. To the northwest of the Omandumba farms lie Anibib Farm (today Ai Aiba Lodge) and Etemba Farm. The Okombahe Reserve is found to the south. In the past, the area was used mainly for livestock farming. Today, the area is used for activities such as wildlife conservations as well as conservation of cultural heritage sites.

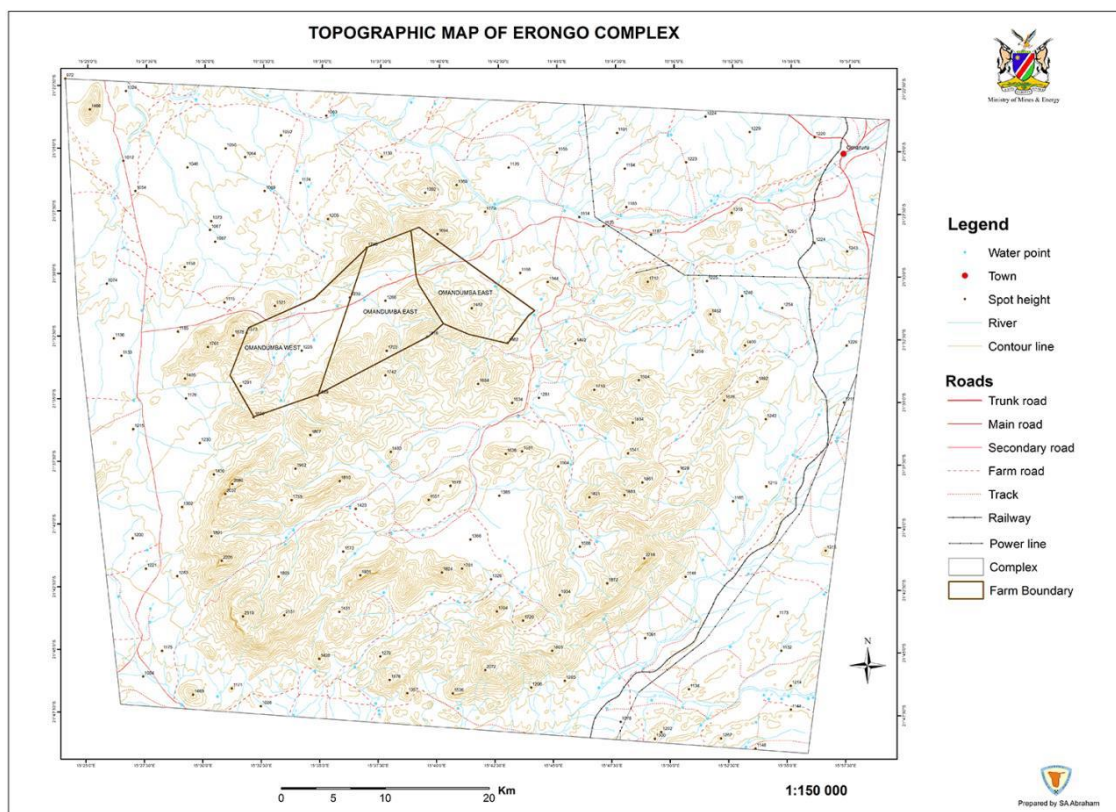


Figure 2.20 Topographic Map of Erongo Complex indicating the location of study areas, Omandumba East and West farms. Map Credits: Geological Survey of Namibia.

Historically, the name Omandumba is derived from the Otjiherero language. It means “the place where the bitter bush grows”. The cattle by Herero pastoralists used to browse on the bush (foliage) around Omaruru, which turned milk bitter. After the disappearance of the

hunter-gatherers about 1000 years ago (LENSEN-ERZ 2007; KINAHAN 2011), this area became inhabited by the present day Herero¹. The Herero migrated to Namibia during in the 17th and 18th centuries from Central Africa during Bantu Migration and established themselves as herders (GEWALD 1998). In the 19th century, the Herero were displaced during from these areas as a result of a prolonged and war with the German. In the period from 1884-1915, the country which is today Namibia was the German colony ‘Deutsch-Sudwestafrika’. Today, two brothers own Omandumba farms, which they acquired at the beginning of the 20th century. The farms occupy a farming area of about 5,244 hectares and fall under the current Erongo Mountain Nature Conservancy. The two farms are adjacent to each other and mapped by the Geometer Keppel from the Imperial Survey Office in Omaruru in April 1913th (BÖRNER 2013). To their northwest side are the adjacent farms of Anibib (where today settled the Ai-Aiba Lodge) and Etemba. To the south is the Okombahe Reserve.

The physical setting of the Omandumba farms is characterised by hills, outcrops and the plains. This is where archaeological heritage resources are found. The geomorphological settings are found between elevations ranging from 1168m (the lowest point) to 1361m above sea level (the highest point). Generally, the vegetation structure is relatively homogenous in Omandumba farms. It is characterised mainly by dense and sparse woodland of about 2-12m in height, shrubs with heights varying between 0.7-5m and grasses that reaches between 0.2-1m in height. The distribution of the vegetation varies depending on geology (soil composition and erosion, (precipitations and temperature) and other aspects (mountain, river, plains and slopes) of the area. For instance, large acacia trees such as the *Vachellia erioloba*, the *Colophospermum mopane*, ‘acacia montis-usti’ *Acacia montis-usti*, as well as certain dwarf shrubs such as the ‘*Artemisia afra* and *Dianthus namaensis* are often confined to river bed (BARNARD 1998) and generally at lower altitudes, usually from an elevation of 1225m-1266m (Fig. 2.13).

Grasses are predominantly found in the plains, at lower and medium altitude, while the Mopani are commonly found along large rivers and in the adjacent wide plains. The plains are further characterized by the deciduous savanna and evergreen nanophyll savanna plant species. Those found within the medium altitude of 1291m – 1482m includes *Acacia hereroensis*, *Tarchonanthus camphoratus*, *shrubland cyphostemma* and *currorii*, while

¹Herero people are Bantu Speaking people who live predominantly in Namibia, Botswana and Angola.

Commiphora species such as *Commiphora glandulosa* and the *Commiphora saxicola*, are confined to volcanic areas where the engraving site is found (see Fig. 2.14). The higher altitude vegetation from 1521m – 1850m in this area is very sparse with comparable plant communities as those found in medium altitudes. There are however, distinct succulents such as the *Aloe dichotoma* and the ‘*Aloe pillansii*, as well as the *Acacia hereroensis* (see Fig. 2.13).

Generally, Omandumba farms have been commercially used for cattle ranching and goat herding. These activities have been expanded to include wildlife conservation, tourism hospitality establishments, i.e., camping (Fig. 2.21) and guest rooms, game drives within the farms, cultural drives to heritage sites, hiking activities and the establishment of the San Living Museum (SLM) since 2008. Here, approximately twelve or more San people (children, young and old men and women) of Ju/’Hoansi originally from Tsumkwe area who dwells and works as seasonal workers at the San Living Museum (SLM), and they camp behind one of a large granitic outcrops in Omandumba West Farm (Fig. 2.22). Here, the San people re-enacted their traditional lifestyles through wearing their traditional clothes to visitors to stimulate the daily life of hunter-gatherers by providing visitors with experimental and interactive activities that recreate the culture, history and natural environment. This includes tracking animals, teaching visitors how to shoot arrows, making bows and arrows, bushwalks to rock art sites, plants used and their roles, dancing and singing.

In general, the San people in Namibia and at the SLM usually wear European clothes and use all kinds of modern devices. They only wear their traditional clothes when they re-enacted their traditional life in the Living Museum. During my three years research in Omandumba farms, some of the local San men from the SLM wore their traditional clothes and were directly involved in the research process such as locating the rock art sites, interpreting fresh animal tracks /spoor locating water points, as well as identifying most of the animal tracks recorded found in the engraving site in Omandumba East farm. Like most of the private farmlands the Erongo Mountains, access to archaeological heritage sites in the Omandumba farms is controlled by permission of the owners and by means of guided tours. Which means that most of the rock art sites are relatively well preserved.

However, in the Omandumba West farm, I have recorded an incident where two of the rock art sites have turned into a popular campsite. These are sites OWF17 and OWF18 (Fig. 2.21

above). There are two types of impacts here: damage to the artworks (rock paintings) themselves and damage to the sites or the physical setting of the site. For example the physical damage to rock painting resulted from campers pouring oily liquids or soapy waters onto the rock surface, or from the act of touching and probably rubbing the paintings, be this intentional or unintentionally. An equally challenging concern is the continuous sweeping of the site ground surface as dust accumulates. This leads to the fading of the artworks and eventually to the disappearance of the surface archaeological collections, thereby reducing the scientific value of the site deposits. This is also the reason why, today, some of the local Erongo farmers encourage archaeological research in their farms considering the fact that they too, have legal obligation towards the protection of archaeological heritage.

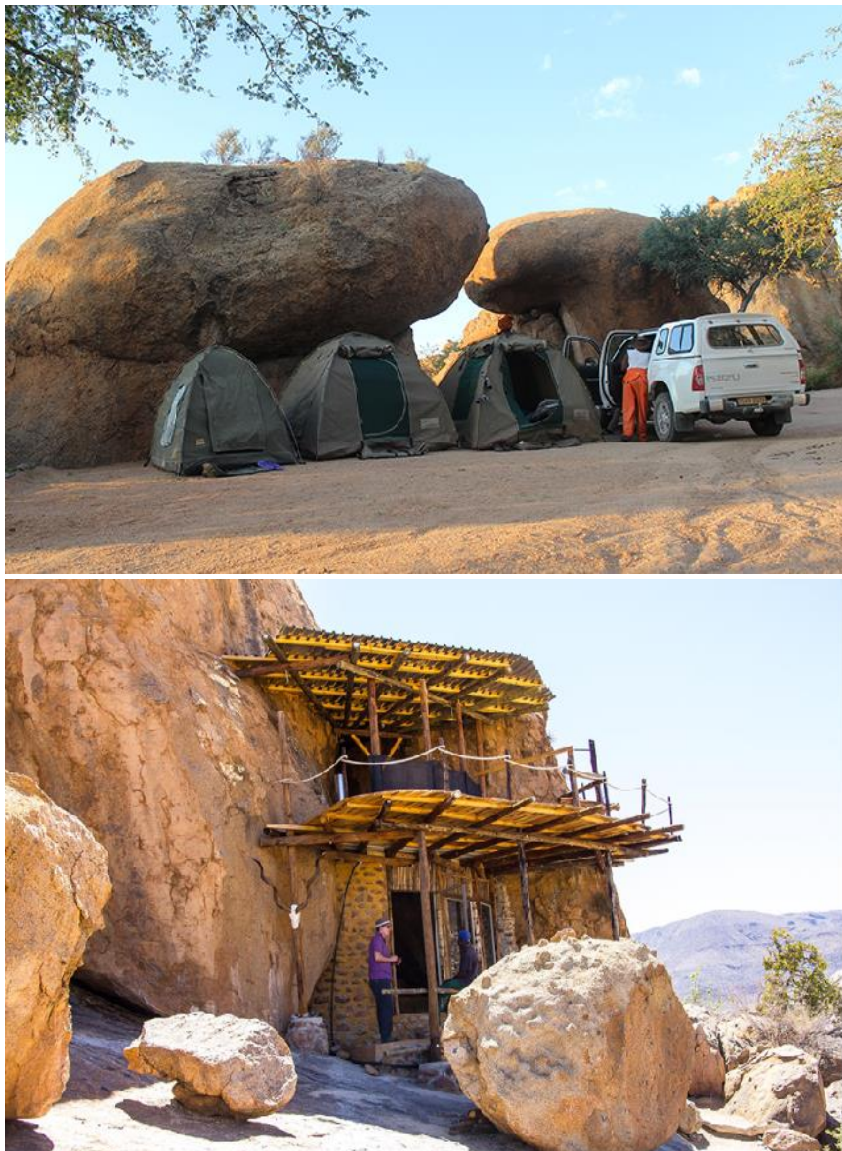


Figure 2.21 Top and Bottom: Camping sites among granite hills and outcrops within Omandumba West farm.
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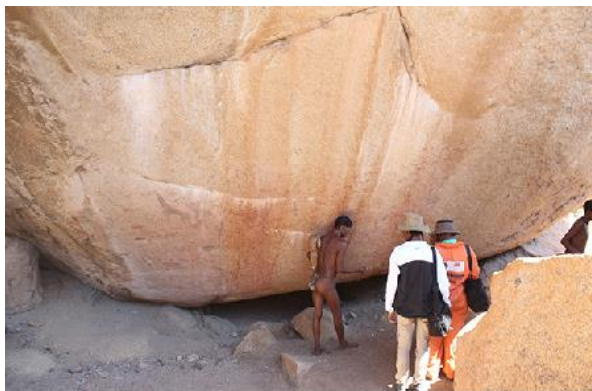


Figure 2.22 The local Ju/'Hoansi San community at the San Living Museum in Omandumba West farm. Middle images show two local San men who assisted us in locating rock paintings and engravings sites. Bottom images shows San men and women engaged in various activities (left, men skinning animal hides while right a woman teaching a girl how to make bead necklaces. Images credits: Harold Rust.

3.PALAEOENVIRONMENT AND ARCHAEOLOGICAL CONTEXTS

This chapter chronicles the general paleoenvironment contexts in which the prehistoric people of the Central Namib lived and responded to climatic variability and environmental shifts from the Late/Pleistocene to the Holocene period. The archaeological context addresses the Middle Stone and Late Stone Age periods of human occupations, the development of rock art research in Erongo Mountains, as well as challenges posed. This overview is based primarily upon the available and accessible published information.

3.1.SECTION A

3.1.1.Holocene Climate of Central Namib, Erongo Region

There are abundant paleo-climatic archives of the Quaternary period that can be used to reconstruct patterns of climatic variations that prevailed during this period and its impact on the landscape, animals and humans. However, there is very limited evidence of palaeoenvironmental shifts in the Namib Desert. This is the result of inadequate investigation, natural deterioration, limited access to sites or, often, geochronological difficulties associated with establishing Pleistocene and Holocene shifts (TYSON 1986; PARTRIDGE 1997, BRÜMEL et al., 2001; HEINE 1998). This has resulted in difficulties and complications in interpreting palaeoenvironmental dynamics especially of the Late Pleistocene to Holocene period in the Central Namib Desert. Providentially, archaeological signatures recorded throughout the late Pleistocene to Holocene period provide fundamental records to further understand palaeo-climatic shifts. The limited available literature (HEINE 1998a; 2004; 2005; LANCASTER 2002; BIERMAN et al., 2001; LANCASTER 2002; LAWSON & THOMAS 2002; MENDELSON et al., 2002; GERSTENGARBE & WERNER 2004; CHACE et al., 2009) provides evidence of Holocene climatic history based on a palaeoclimatic studies obtained from some of the geoarchives within the Namib Desert (Fig 3.1.).

Earlier and available geoarchives evidence suggested that the Namib Desert had experienced mostly arid conditions throughout its quaternary period as a result of the cold Benguela upwelling zone and its associated atmosphere circulations in the south Atlantic (BIERMAN et al., 2001). As a result, the climate remained relatively unchanged in Namibia during this

period (Ibid 2001). However, slight climatic fluctuations were recorded during the early Holocene period from around 10, 000-8,000 BP in the Central Namib and generally in Namibia where the climate became relatively wetter and colder (LANCASTER 2002; HEINE 2005) as indicated in palaeoclimate geoarchives (Fig. 3.1) collected from fluvial deposits in the Namib Desert. Here, short dry episodes manifested themselves from early Holocene period, around 9,800BP to 8,3000 BP in the central Namib (HEINE 2005:124). Still, researchers investigating climate change in Central Namibia could not explain the possible cause of such fluctuations during this period. It is possible however, that such shifts affected Central Namib's climatic antiquity during this time since Namibia's today's climate is comparable to what it was for the large part of Holocene (HEINE 2005:127).

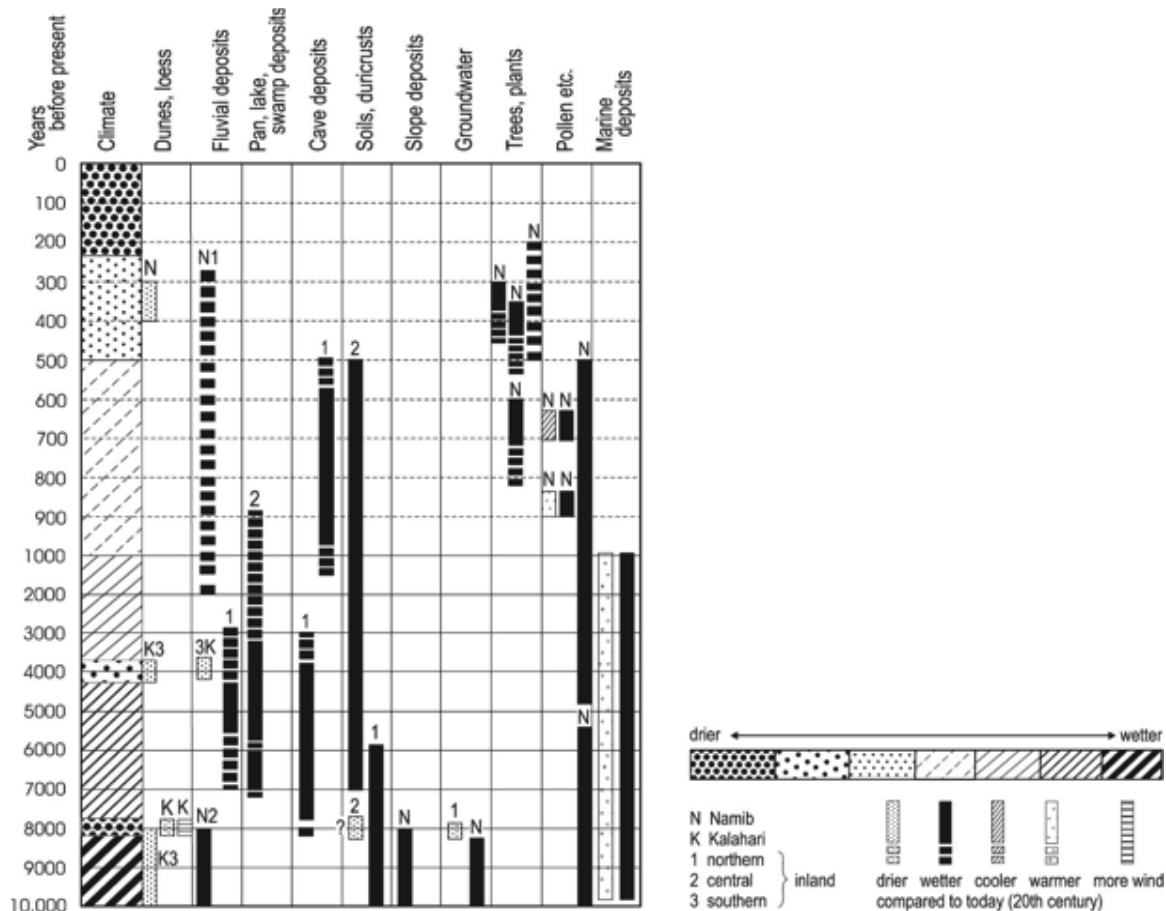


Figure 3.1 An overview of the palaeoclimatic proxies for the Holocene; evidence from different geoarchives for periods in Namibia. N and 2 represents the Namib and Central Namib areas, (after HEINE 2005:128).

The mid-Holocene was marked by global cooling trend until the Late Holocene (HEINE 2005; MARCOTT et al., 2013). Here, the climate became warmer due to the retreat of Last Glacial Maximum (LGM). Such evidence indicates that there was an increase in rainfall, which, subsequently, results in the increased in groundwater level as river discharges in form

of flash-flood episodes (LAWSON & THOMAS 2002). However, researcher suggests that such trend did not necessarily mean that the desert was less extensive, but vegetation must have partially covered larger areas than today (LAWSON & THOMAS 2002; MARCOTT et al., 2013). Such evidence was supported by faunal analyses and radiocarbon dates from a fossil hyrax from the edge of the northern Namib Desert, which reveals that the late Pleistocene and Holocene vegetation types in the Namib Desert was characterised by *Poacea* *Cyperaceae* or *Chenopodiaceae* responding on account of a large quantity of rainfall (SCOTT et al., 2009). The archaeological records on the other hand suggest an appearance of archaeological signatures in the central Namib during this period due shifts from colder to long-term warmer climate occurring in the mid-Holocene between 8,500-5,000 BP with a few sites recorded on the edge of Messum, the Erongo mountains and the Mirabib area (see WENDT 1972:14; KORN & MARTIN 1939:19; SANDELOWSKY & VIERECK 1969:12; SANDELOWSKY 1977). However, with the increased in aridity in the central Namib Desert and its adjacent areas from last 5000 BP it affected seasonal climate variations consequently altering local landscape and the mobility patterns of the Namib inhabitants (HEINE 2005).

It is said that the aridity can be attributed to a number of factors including the cold Benguela Current (little rain, lower temperature, expanded subtropical high-pressure cells and reduced austral-summer precipitation due to a northward shift of the Inter Tropical Convergence Zone (HEINE 2005; URREGO et al., 2015). The increase in aridity of the central Namib therefore led to sudden decrease of certain vegetation that had thrived well during early Holocene period (CHASE et al., 2010). The situation was apparently so critical that the Namib barely support vegetation and its inhabitants.

3.1.2.Human response to climatic shifts in Central Namib of Erongo Region

The survival of prehistoric populations in the Central Namib is inextricably and linked to how they responded to climatic and environmental conditions. Although humans do not automatically respond to environmental changes, restriction in basic resources (food, water and shelter) can significantly constrain their choices. This section briefly discusses how human response to climatic and environmental shifts in the central Namib of the Erongo region from Pleistocene to Holocene periods.

The existing archaeological evidences suggest that the earliest inhabitants of Central Namib inhabited the Namib plains during the Pleistocene period occupying several rock shelters of the Namib plains and some rock shelters in the Erongo, Brandberg and Messum highlands and the lower !Khuseb River (KINAHAN 2011:20-21). Yet, the Middle Stone Age (MSA) evidence during Upper Pleistocene remains restricted (KINAHAN 2011; RICHTER 1991; SCHMIDT 2011). Such reductions are often indicative of several factors including environmental challenges, population decline, and abandonment of sites or conservation challenges. It is difficult to pinpoint the exact cause of this during this period given that most of the MSA evidenced of the Central Namib have been recorded in highland areas that likely offered greater and more readily available resources. One would be under the impression that hunter-gatherers would have optimally utilised a wider range of resources and areas within these highlands, thereby increasing the number of archaeological sites. However, it is probable that early MSA climatic conditions of the central Namib presented significant challenges to its prehistoric inhabitants, as it brought unfavourable cold and arid climatic conditions (VOGELSANG & EICHHORN 2011).

The decline of the archaeological signatures has similarly been observed in the early Holocene periods (from around 10,000-8,500BP) in central Namib, with a few sites recorded on the edge of Messum, the Erongo mountains and the Mirabib area (WENDT 1972:14; KORN & MARTIN 1939:19; SANDELOWSKY & VIREECK 1969:12; SANDELOWSKY 1977). The early Holocene climatic regime in this area exhibited variations including an increase in precipitation, aridity and flash flood conditions (LAWSON & THOMAS 2002; BOURKE & SHAW 2003). The period marked the retreat of last glacial maximum (OIS2) (HEINE 2005). Thereby resulting in rising temperatures and a massive influx of fresh water. It's likely that part of the central Namib plains and its main rivers and their tributaries flooded the surrounding areas. Such conditions presumably led to rapid changes in landscapes (flora and fauna), which would require rapid responses by hunter-gatherers.

It is, therefore, possible that such changes disrupted prehistoric hunter-gatherer subsistence patterns thereby compelling them to abandon low-lying areas to more affluent areas (highlands) that offered better refuge (caves and larger rock shelters) and adequate basic resources (food and water) to sustain them which would untimely lead to demographic recovery. Consequently, such conditions increased the prospects hunter-gatherer mobility

beyond the Namib plains as changes in mobility their is largely linked to changing environmental conditions and a reduction of critical resources.

From the early to the mid-Holocene period, the Namib witnessed a significant increase in diversity and complexity, evident by the great concentration of Late Stone Age archaeological records in the highlands areas of Brandberg, Spitzkoppe, the Erongo Mountains, and, to some extent, Messum and the adjacent areas (RUDNER 1957; WENDT 1972; SANDELOWSKY 1974; SANDELOWSKY & VIERECK 1969; SCHERZ 1970; JACOBSON 1976; WADLEY 1979; PAGER 1989-2006; ERVERDOSA 1980; RICHTER 1984, 1989, 1991; KINAHAN 1984, 2001a, 1990; BREUNIG 1989a-c, 2003). This corresponds to a significant increase in favourable and stable climatic and environmental conditions in the highlands as the period corresponds to the retreat of last glacial maximum and the beginning of warmer period (HEINE 2005). Palaeoclimatic proxies from pollen analysis of the Namib Desert revealed cooler and wetter conditions, with increased precipitation around this time (CHACE et al., 2009; LANCASTER 2002). This allowed for the migrations and diffusion of people beyond the central Namib.

Since the Namib Desert experienced increased warming and drying throughout mid-Holocene, the intensity of the aridity varied through time and across space on account of topographical and geographical variations. The coastal area and the Namib plains, for instance, might have experienced increased temperature, high evaporation rates, although moister conditions prevailed given their proximity to the Atlantic Ocean. Osteological remains of micro mammalian bones from Mirabib, which dates from the last 6000 years, suggest a more favourable habitat, with moister conditions and more grass cover (BRAIN & BRAIN 1977). Highland areas such as Brandberg and the Erongo Mountains, for instance, receive more rainfall (orographic precipitations) and other moisture (fog and mist) than the surrounding Namib Plains and the Spitzkoppe Mountain given their close proximity to the Atlantic Ocean. This means that the advantageous configurations of these areas afforded even more favourable range of microclimates for human exploitation and habitation. Consequently, hunting and gathering economic activity must have sustained them this period.

The aridity of the Namib Desert intensified towards late Holocene period (KINAHAN 2005; CHASE et al., 2009, 2010). An investigation into the Hungorob ravine in Brandberg revealed intensive and recurring occupations from about 5000 years ago, while sediment analyses

further supports the increasingly arid conditions (KINAHAN 1984, 2001a *cf.* KINAHAN 2005:121). Moreover, detailed palaeoclimatic inquiries into sites in central and northwestern Namib also shown series of rapid aridification events beginning of 3800 BP, which marked a progressive decrease in regional humidity across Southern Africa (CHASE et al., 2010:36-45).

The latter led to the seasonal migration of large game to affluent areas that offered water sources. It was during this period that resources (water and food) became meagre; consequently, sites occupation also becomes localized. For instance, KINAHAN (2005:121) observed that faunal remains from Hungorob revealed that the site occupants' diet consisted mainly of small species including the rock dassie (*Procavia capensis*), the klipspringer (*Oreotragus oreotragus*) and red rock rabbit (*Pronolagus randensis*), this in order to cope with diminished food resources, i.e., large game. He argued that the presence of bone fragments at the Hungorob sites from larger animal species must have been brought as raw materials for artefacts. The increase in hunter-gatherer mobility in the highlands was a response to restricted and scarce resources.

Evidence obtained from the Spitzkoppe Mountain (KINAHAN 1990:7-8) also supports this view. Here, faunal remains from archaeological excavations at the Bushman Shelter show that small animal predominate, and these including include tortoises, mongooses, birds, rodents, ostrich eggshells, as well as hunted animal such as springbok. The aridity of the area must have constrained water resources, forcing large game to migrate. The reduction in hunting strategies led to the production of rock art tradition and the adjustment of stone tool technologies, as well as the exploitation of plants to supplement their diet as revealed by the floral remains. Correspondingly, faunal taxon from the Leopard Cave in Erongo Mountain the predominance of easily captured animals such as birds, reptile species, rock hyrax and ostriches, although bovidae species are also represented (PLEURDEAU et al., 2012). Such evidence therefore indicates systematic changes and probably the demise and untimely collapse of hunter-gatherers economic communities, as evidenced by a decline in archaeological records until +800 years (RICHTER 1993; BREUNIG 2003).

3.1.3. An overview of the archaeological records in Erongo Region

The Erongo Region is renowned in Namibia for its rich archaeological records (Fig. 3.2). The distribution, although regionally irregular, comprises of the areas with the highest

concentrations in granitic inselbergs of Daureb/Brandberg, Erongo Mountains and the Spitzkoppe mountains. The region's archaeological evidence has been divided into the following chronologies: from the Pleistocene (the Middle Stone Age and Late Stone Phases) to the Iron Age period. Each had its own cultural industries and traditions. There was often an overlap, indicating a broader and high-level geographical continuity between the hunter-gatherers and the herders. Some of the cultural periods are further divided into cultural phases (Fig. 3.4).

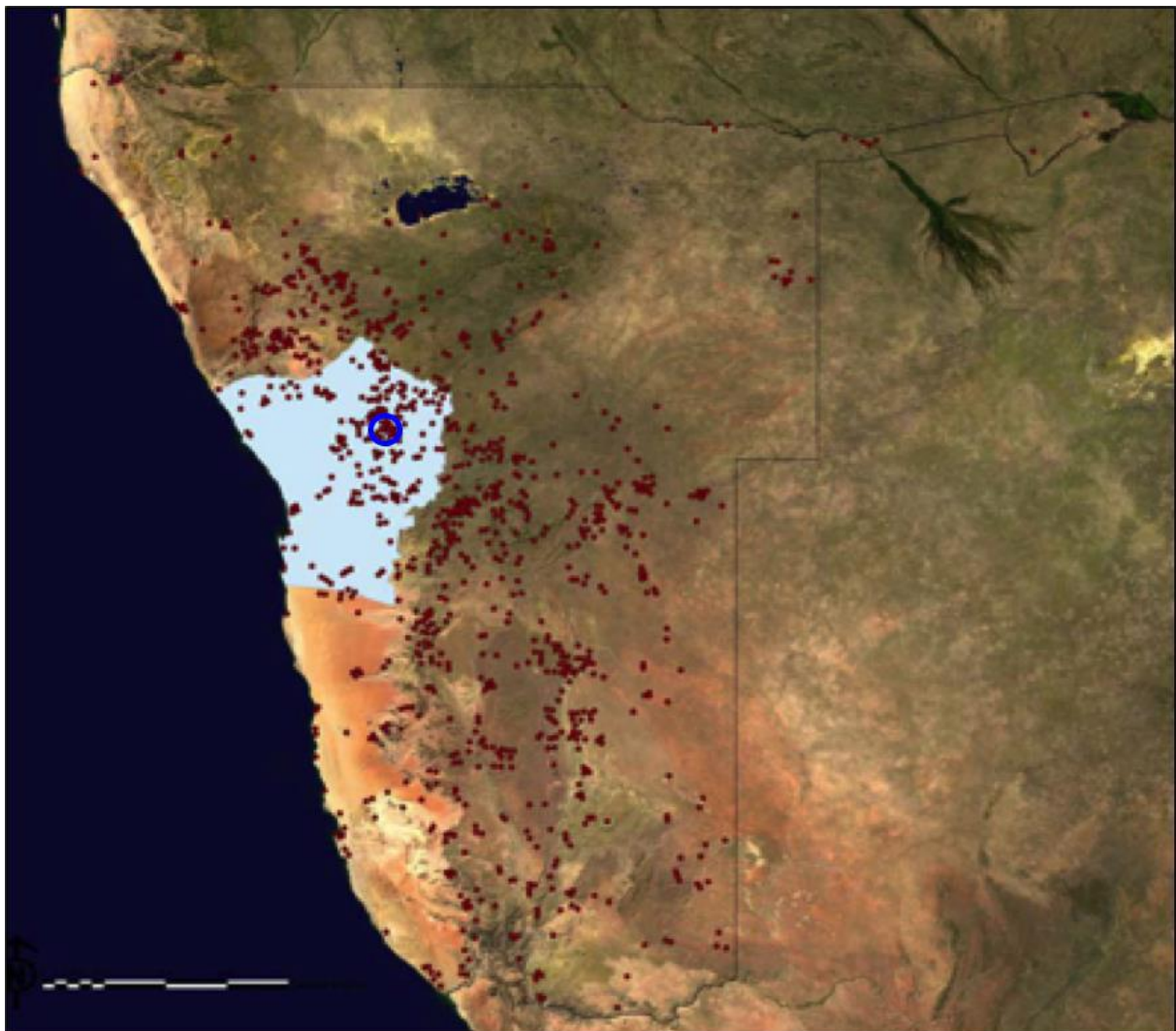


Figure 3.2 The general distribution of known archaeological sites in the Erongo Region in relation to other archaeological sites in Namibia. The location of Erongo Mountains is indicated in a blue circle (Edited, after, KINAHAN 2011)

a. Pleistocene Period (400,000–10, 000 years ago)

The earliest evidence of human occupation in the region can be traced back from a significant assemblages of late Pleistocene Period of the Early Middle Stone Age periods (from 400, 000-100,000) discovered in the Namib plains and several rock shelters in the Namib Desert

(Fig. 3.3), and also the lower !Khuiseb River where bone fragments of an extinct elephant and stone tools associated with Acheulean Industry were recorded (KINAHAN 2011:20-21). Other Pleistocene evidences has been those yielded from the Middle Stone Age (MSA) archaeological sequences at Erb Tanks (MCCALL et al., 2011) and Messum 1 E near Brandberg Mountain (VIERECK 1961; SCHERZ 1974; WENDT 1972; RICHTER 1984, 1991). The MSA sites from the Erongo Mountains include those excavated by W.E. Wendt, the Fackelträger E in Omandumba West, farm Etamba14 E, Davib-Ost farm and in the Cymot shelters of Ameib farm (KAHN 1965; SCHERZ 1986; WENDT 1972; RICHTER 1991; SCHMIDT 2011; SANDELOWSKY & VIERECK 1969), including Otjongoro farm by W. Sydow, which remained unpublished (RICHTER 1991). The two excavated Brandberg MSA sequences include Amis 10 and Amis 11, but have provided little information on technological and chrono-cultural issues (BREUNIG 2003: 65–111, 112–140 cf. SCHMIDT 2011). The technological industry of the MSA assemblage at these sites is predominantly made up of hand axes, pointed flakes (pseudo-Levallois points), unretouched flakes, cleavers, blades etc., recovered from various excavated archaeological layers and surface collections attributed to Levallois technology.

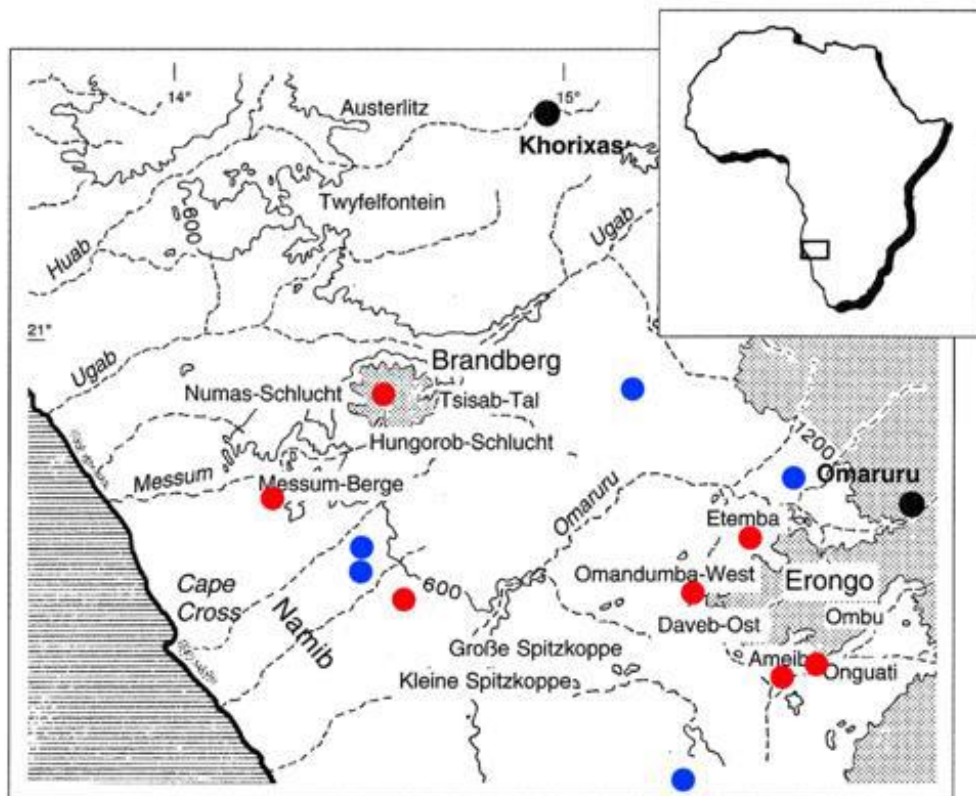


Figure 3.3 Map of Namibia indicating the location of MSA sites of the central northwestern Erongo region. The blue dots show excavated sites while surface collections are in red. (Map Credits: RICHTER, 2002:525, modified)

The Pleistocene Epoch of the Early Middle Stone Age in Erongo, and, generally, Namibia corresponds to the development of regional lithic traditions, the appearance of technological innovations, the emergence of the modern species *Homo sapiens*, as well as the development of their cognitive abilities and strategies. It further provides a global significant evidence for the understanding of human and environmental responses to climatic shifts in the Namib Desert in the Late Stone Age period (SMITH & HESSE 2005). It is a period that has seen increased human activities associated with the expansion of hunter-gatherers in Namibia and, generally, Southern Africa. Other MSA sites are found in southern Namibia, sites such as Bremen 1C and Bremen 2B, Aar 2, Zebra River, Zais and Apollo 11 (WENDT 1972, 1976; VOGELSANG 1996, 1998; JACOBS et al., 2008; VOGELSANG et al., 2010).

Despite frequent surface scatter and distribution of MSA lithics artefacts in the Namib Desert, most of sites are becoming increasingly susceptible to extensive mining explorations, even though archaeological impacts assessments are carried out in the area (KINAHAN 2011). This occurs in combination with the natural deterioration, accessibility to the sites (some are believed to be concentrated in the Namib escarpment zones), inadequate archaeological investigations of MSA assemblages or the scarcity of MSA sequences in some areas. The absence of early human in the Central Namib remains a challenge given the aridity of the area. Furthermore, the extreme shortage of English publications and those that remain unpublished made the Pleistocene component of the archaeological record relatively thin (RICHTER 1991; KINAHAN 2011; SCHMID 2011). There is, therefore, a need for further scientific research of MSA sites in Namibia in order to broaden our knowledge of the variability and diversity of cultural complexes within the MSA to determine local and regional-scale occupation patterns and reconstruct the palaeoenvironmental settings of southern Africa during the Middle Pleistocene.

b. Holocene Period (10,000–1,000) Years

The Holocene period of the Stone Age period in the Erongo Region is one of the most intensely investigated periods (BREUIL 1960; RUDNER 1957; WENDT 1972; SANDELOWSKY 1974; SANDELOWSKY & VIREECK 1969; SCHERZ 1970; JACOBSON 1976; WADLEY 1979; PAGER 1989-2006; ERVERDOSA 1980; RICHTER 1984, 1989, 1991, 2002; RICHTER & VOGELSANG 2008; BREUNIG 1989A-C, 2003; KINAHAN 1984, 2001a, 1990, 2005; LENSSEN-ERZ 2001, 2007; GWASIRA 2008, 2011, 2012; PLEURDEAU et al., 2012; BÖRNER 2013; NANKELA 2013, 2014, 2015; MVIMI

2015) in Namibia primarily due to the great concentration of LSA sites within the central Namib and the commitment of researchers. According to Richer, the Holocene Period in the central Namib is divided into the following cultural phases, each with its own chronology and its associated industry (RICHTER 1990).

c.Late Stone Age: Phase A

Chronologically, the earliest evidence of the Late Stone Age Period occupation in the region dates back from 10,000 to 7,000 BP. This is Phase A according to RICHTER (1991:189), with archaeological assemblages produced from very few sites such as Messum 1E (WENDT 1972:14; KORN & MARTIN 1939:19) near Brandberg, Austerlitz E near Twyfelfontein and Cymot Shelter within Erongo Mountain (WENDT 1972:13; SANDELOWSKY & VIERECK 1969:12; RICHTER 1991:189; BREUNIG 2003:273) and the archaeo-botanical inventory recovered from the Mirabib Hills Shelter (SANDELOWSKY, 1977).

The inventories associated with Phase I industry recovered from these sequences are relatively small in quantity. Microlithics assemblages predominate, notably with single bifacial retouched points related to hunting equipment such as bows and arrows and numerous ostrich eggshell beads. Limited sites from Phase A indicate a short-term settlement patterns by small group of population, attributed to the transition of Late Pleistocene to Early Holocene period when the climate was still relatively colder. The Early Late Stone Age peoples of the central Namib were hunter-gatherers, characterized by sparse and small population, the exploitation of wild plant and animal resources, seasonal demographic shifts, occupation of rock shelters and the production microlith tools for the preparation of foods.

d.Late Stone Age: Phase B

The spread of the microlithic technology extended to Phase B sites of the Late Stone Age period in the Erongo roughly 7,000 to 5,600 bp (RICHTER 1991:196). Relative dates have been obtained from two Erongo sites, the Cymot shelter (Nieuwoudt) around Erongo Mountain (SANDELOWSKY & VIERECK 1969:12; RICHTER 1991:196) and the 'Girl's School Shelter T6.1 in the Tsiasab ravine of the Brandberg Mountain (RUDNER 1957; RICHTER 1991). Similar to Phase A, artefacts from this Phase reveal a rich and diverse microlithic industry with also high presence of scrapers, supplemented by some worked and un-worked ostrich eggshell beads and the first appearance of a pestle and some bones points.

The resemblances in tool typologies in the choice of preferred raw materials (shale, quartz and crystal), as well as the tools such as micro scrapers, which signifies the spread of microlith tradition and continuous settlement patterns beyond central Namib i.e., from Mirabib Hills in the central Namib to Twyfelfontein area where Zwei Schneider sites with absolute dates were recorded. Phase B marks the beginning of people's mobility from Namib plains to the highlands (the mountain of Brandberg) as a result of a warmer and drier climate at this time and animal migration.

e.Late Stone Age: Phase C1

Various Erongo sites have been recorded in Phase C1, roughly 5,400 – 3,400 BP, with the industry extending to Phase C2 (RICHTER 1991:196-197). Materials documented in this phase comprised of direct assemblages excavated from the sites of Messum 2 (WENDT 1972:15; RICHTER 143-150), associated inventories from Upper Brandberg sites of Rock Fall shelter (KINAHAN1984), Lower Numas Cave as well as Erongo site of Stripped Giraffe shelter (JACKOBSON 1976:207). Phase C1's industry is characterised by a diversity of geometric microlithic artefacts attributed to the Wilton tradition, worked and decorated ostrich eggshell beads, pendants, a pestle and some bone fragments as well as the first appearance ceramic industry. The lithic typologies of this Phase originate from local raw materials of shale, quartz and crystal.

f.Late Stone Age: Phase C2

Phase C2 occurred roughly 5,400 – 2,000 BP, and it was an extension of the previous phase. It marked a rapid increase and concentrations of archaeological sites within Erongo due to increased in population as a result of improved, favourable environmental conditions and climatic period, enabling the survival of the population (VOGELSANG & EICHHORN 2011:37). The period was also marked by the shift of vegetation from open grassland to the development of bush and shrub vegetation as a result of increase moisture. Most of these sites offered sources of water for both people and animals. Dates from central Namib were obtained from the prominent sites of Fackelträger D1-4 and Etemba14D, while those dated in association includes the Stripped Giraffe shelter, the Big Elephant shelter 2 and 1, Cymot shelter, Phillip's Cave, Etemba L2 A (JACKOBSON 1976:207), while the latest absolute radio carbon dates were recorded at the site of Leopard Cave marking the first appearance of

domesticated caprines (fat tailed sheep) and possibly herders in southern Africa (PLEURDEAU et al., 2012).

Various Brandberg sites including Girls School shelter 4, Tiara shelter T2, Lower Numas Cave 7, Amis 10, Amis 11, Umuab B2 (BREUNIG 2003), Rock Fall shelter 3 (KINAHAN 1984) were also dated in association similarly to Geisterhohhle 3 in the central Namib (RICHTER 1991:197), as well as the Riesenhöhle shelter in the Brandberg Mountain (BREUNIG 1989c; RICHTER 2002:529) in this Phase. There were changes in the material industry associated with Phase C2. These include significant technological changes marked by the possible first appearance of rock art tradition (no direct dates yet) corresponding to Mode 1 (RICHTER 2002:528). The majority of rock art sites in the Erongo area dating from this period were occupied first by the hunter-gatherers groups or hunter with sheep sporadically (PLEURDEAU et al., 2012).

g. Late Stone Age: Phase D

These sites with evidence of occupation occurring in Phase D roughly 2,000 – 1,000 BC include those excavated from Etemba 2B Messum 1 AB. Absolute dates were attained while relative dates were recorded at sites of Etemba L1A, Fackelträger C, Big Elephant shelter 3 and most of the Brandberg sites, including Fall Rock shelters (KINAHAN 1984, 1991:198), Eros shelter (VOGEL 1971) and Mirabib Hill shelter (upper layer) (SANDELOWSKY 1977:71). Phase D industry assemblages comprise of extensive microlith artefacts of the LSA dominated by micropoints side scrapers made of local raw materials, namely, quartzite and rock crystal, with the *débitage* production characterized by flakes and chips.

The industry is further marked by the introduction of burned ceramics/potteries, pestles with a variety of pigments used in the production of rock art sites arts with a variety of subjects and the dominance of animal figures in engravings including the rare representations of fat-tailed sheep (RICHTER 2002:528), where certain animals, i.e. giraffes, are painted or engraved with matching spoors/tracks.

h. Late Stone Age: Phase E

Erongo sites such as Fackelträger A, Etemba L1A and the majority of the Upper and lower Brandberg sites such as Fall Rock shelter 10, Girls School shelter A2 and Numas Entrance shelter were registered within the last Phase of the Late Stone Age period, roughly 1,000- 800

years (RICHTER, 1991:198). Period marks a dramatic transition from a hunter-gatherer lifestyle to an increasingly herders way of life. The period designates the abrupt abandonment of rock art tradition *also* Mode 3 and 4 especially in the rock shelters in the areas around Brandberg Mountain (BREUNIG 1989A. 1989B). The rapid decline of sites within this period is attributed to the population decline and unfavourable climatic conditions (SPANGLER 2007:22).

i.Iron Age: Phase F

Iron Age record in the central Namib is relatively recent and is marked by very few sites recorded at top layers in Messum Mountain, Messum 1 1370 ± 50 ; Striped Giraffe Shelter A4 370 ± 40 as well as few sites within upper Brandberg Mountain, also Brandberg Culture such as Hungorob Schlucht series; Orabes Schlucht series Amis Schlucht; Grosse Dom Schlucht as well as lower Brandberg sites including Tsisab Schlucht series. The industry associated with this phase includes archaeological artefacts harvested from either surface or top layers of these above mentioned sites in Erongo including charcoal clumps scraped from surface, roughly packed stone wall, crude stones, stone circles, potteries, iron and smoking pipes (RUDNER 1957; JACOBSON 1976; VOGEL & VISSER 1981:59-63).

Vergleichende Tabelle zur Urgeschichte Namibias (vgl. S. 256 ff.)

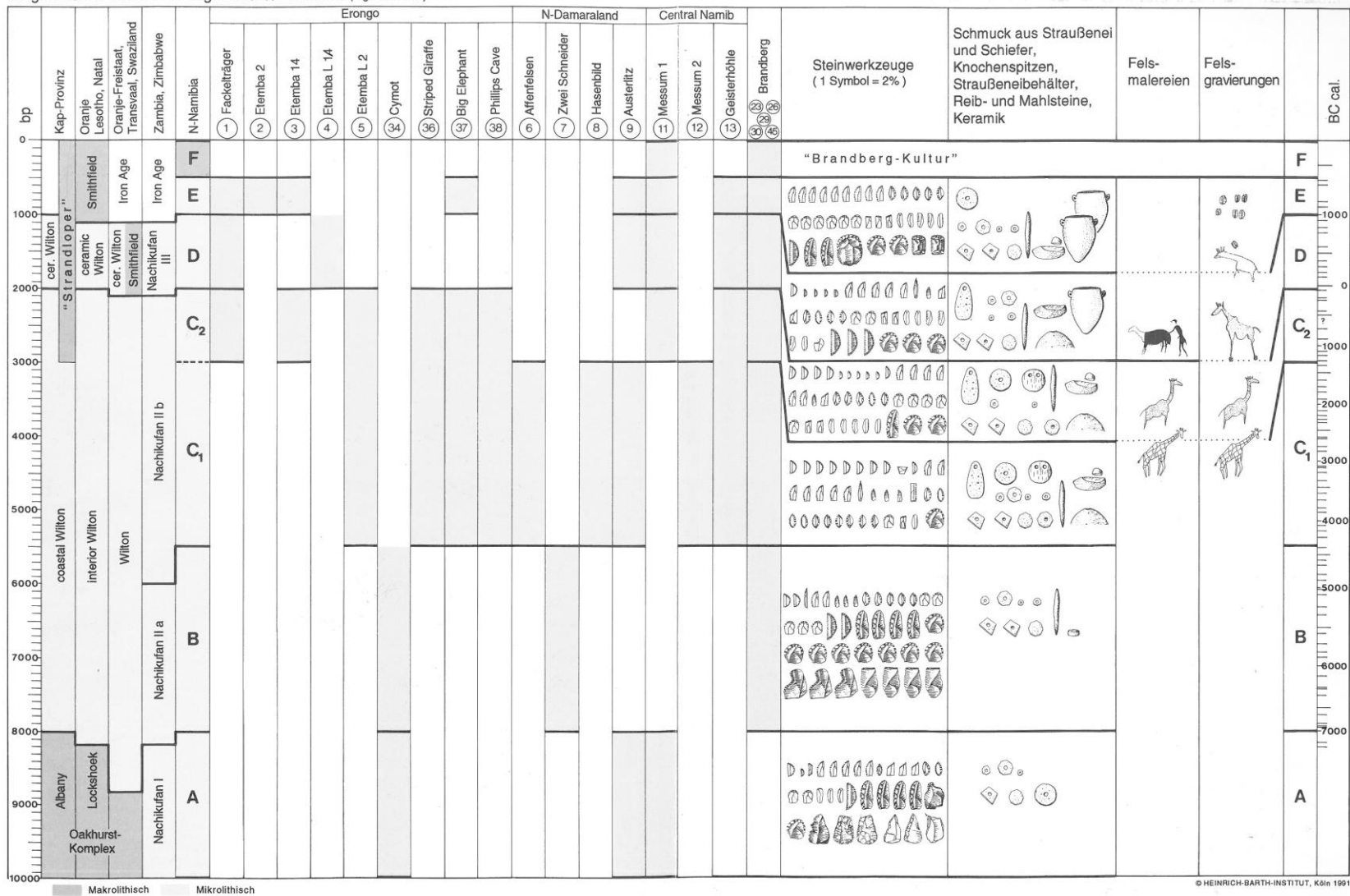


Figure 3.4 The detailed chronological division of the Holocene period of the LSA outlining major cultural phases and traditions in the Erongo region of the north Central Namibia. (After, RICHTER 2002:530)

3.2.SECTION B

Following the brief palaeoenvironmental and archaeological context of Central Namib Desert, Section B provides a synopsis the archaeology of the Erongo Mountains from Middle Stone Age to Late Stone Age period. We will then provide a short history of rock art research in the Erongo Mountains, as well as the challenges facing this research.

3.2.1.An overview of the archaeology of the Middle Stone Age and Late Stone Age of the Erongo Mountains

The Erongo Mountains are one of the key archaeological areas in Erongo cultural landscape with an exceptional archaeological heritage and a high concentration of prehistoric rock art. However, it remains one of the least studied archaeological areas of the Erongo landscape. This is attributed to a number of factors, including the fact that the entire mountain, unlike most sites, is on private land, the fact that there is a lack of archaeological funding and the fact that there is an acute shortage of Namibian archaeology researchers, and the fact that there is less commitment from researchers.

Nonetheless, the earliest archaeological investigations in the Erongo Mountains confirm the existence of human occupations dating back as far as the Middle Stone Age to the Late Stone Age period. The archaeological investigations carried out in the mountains were driven primarily by researchers' attempts to establish a chronological framework between rock art and archaeological deposits in Namibia (WENDT 1972) since archaeological investigations into the Erongo Mountains were relatively scarce at this time. The Erongo Mountains MSA sequences are far less extensive than the LSA assemblages as a result of scarcity of MSA sequences, natural deteriorations, inaccessible but published MSA literatures (often written in foreign languages other than English) and lack of directly dated MSA assemblages (SCHMIDT 2011; KINAHAN 2011).

The chronology of the MSA sequences in the Erongo Mountains was largely determined by the typological identification of the surviving MSA materials, namely, the microlith artefacts, whose dates go beyond the limits of the radiocarbon method (JACOBSET et al., 2008; VOGELSANG et al., 2010). The MSA industry technology that predominated was that of the microlith, artefacts including scraper-like tools, hand axes, pointed flakes (pseudo-Levallois

points), blades cleavers, blades etc., recovered from various archaeological contexts (excavations and surface collections) attributed to Levallois technology. The Late Stone Age period, on the other hand, is one that displays the richest and diverse industries that record intense human activities. The period saw the emergence of pottery technology, worked bone tools. It is generally believed that most of the rock art in Southern Africa were produced in the LSA period (RICHTER 2002). (See also Fig. 3.4.)

Key MSA and LSA sites in the Erongo Mountains include Etemba 14 in the Etemba farm, Fackelträger and Leopard Cave in Omandumba West farm, Cymot shelter Nieuwoudt, Striped Giraffe shelter, Phillips Cave, Great Elephant Shelter in the Ameib farm as well as Davib-Ost farm (Fig. 3.5).

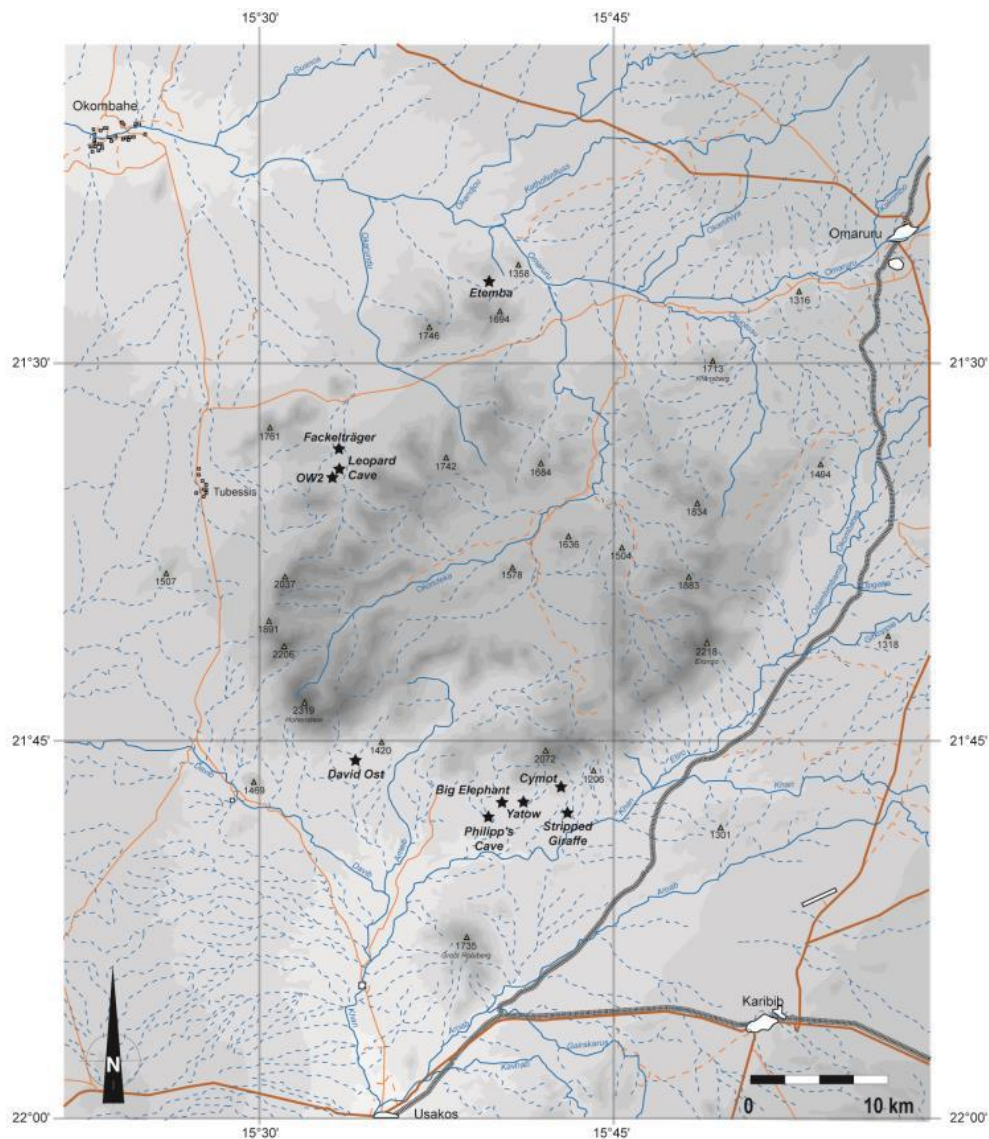


Figure 3.5 Topographic Map of the Erongo Mountains indicating the location of archaeological investigation into MSA and LSA sites (After, PLEURDEAU 2016:7)

Among the Erongo MSA sites, Etemba (Fig. 3.6) clearly stands out. The site's MSA finds were initially discovered during an extensive survey in the Erongo region by a German surveyor (LEBZELTER 1930) where stone materials labelled as 'Erongo-Kultur' based on typological observations were considered to belong to the 'Blade-Industries' of the MSA (SCHMIDT 2011). The site subsequently became a subject of archaeological investigation firstly by W. E. Wendt in 1968 in his quest to establish the chronological position and archaeological context of rock art (WENDT 1972: 11). Here Wendt recovered MSA lithic artefacts at the base of a rich LSA sequence, as well as two possible heavily fragmented human cranial fragments were identified. Such findings led to the second archaeological investigation by (RICHTER 1991).

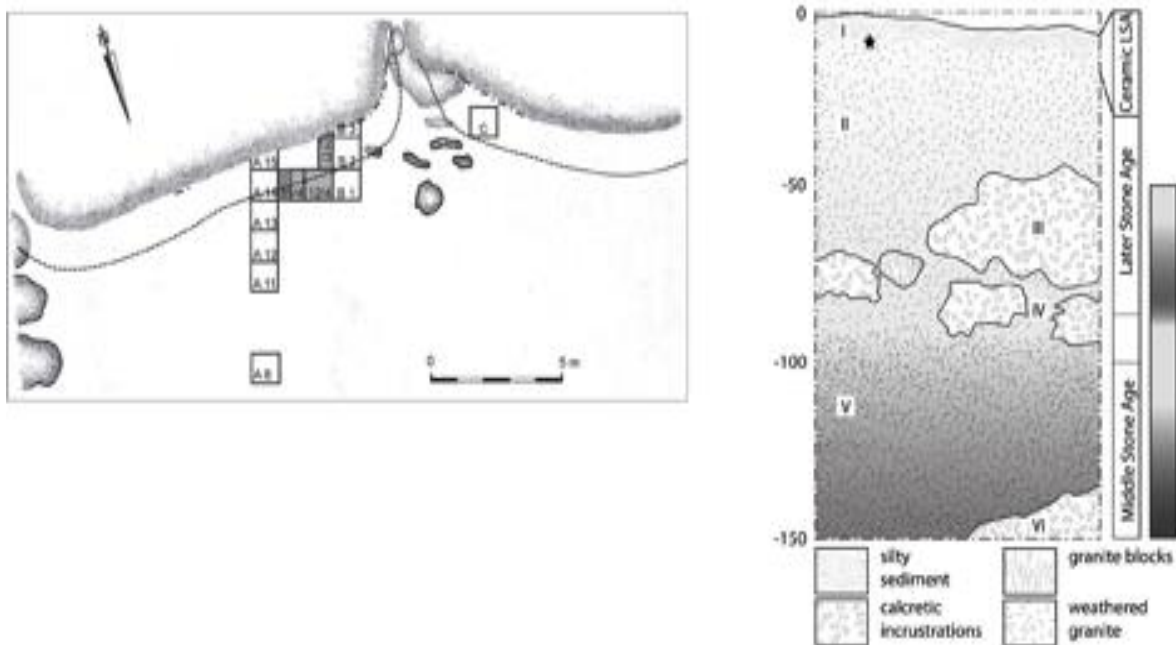


Figure 3.6 Etemba 14 excavation plan of 1968 and 1984 (left). (Right) are the MSA and LSA stratigraphical Layers (After, Richter 1991 & Schmidt 2011).

The majority of the yielded MSA artefacts comprised of discoid cores and retouched pieces, Pseudo-Levallois points and Levallois preferential flake whose chaineopératoire was reconstructed by Isabell Schmidt (SCHMIDT 2011), with raw materials (such as dyke rocks and quartzite) originating from in proximity of the site. The site's LSA occupations reveal at least two periods of use, with us having radiocarbon dates from the beginning and the end of the third millennium BP. The oldest 14C Date LSA-use is about $2,130 \pm 120$ BP and 210 ± 100 (WENDT 1972:39).

Perhaps the most extensive MSA assemblages are those excavated from the Fackelträger site in Omandumba West Farm by E.Wendt in 1968, which is said to be one the richest MSA inventory in the northern Namibia to date (RICHTER 1991). Here, more than 26 707 lithic artefacts including a small number of discoid cores, retouched tools and microlith artefacts such as scrappers were recovered. Its MSA layers contained no traces of charcoal, ash bone or ostrich eggshells, but indicated an intensive use of Levallois and retouched artefact forms (WENDT 1972). Such occupation was directed towards activities such as hunting and tool production. The oldest 14C Date LSA-use is about 2,980 ±120 while most recent is 2770 ± 120BP (WENDT 1972:39). In the mid -section of the horizon B of the LSA was a concentration of 360g of hematite, as well as a pigment-stained pestle whose dates were established to be between 3.500BP - 2.000BP and/or from 1,550 BC ±50 AD. The rock art figures at the site are, therefore, associated to the LSA period of occupation (Fig. 3.7).

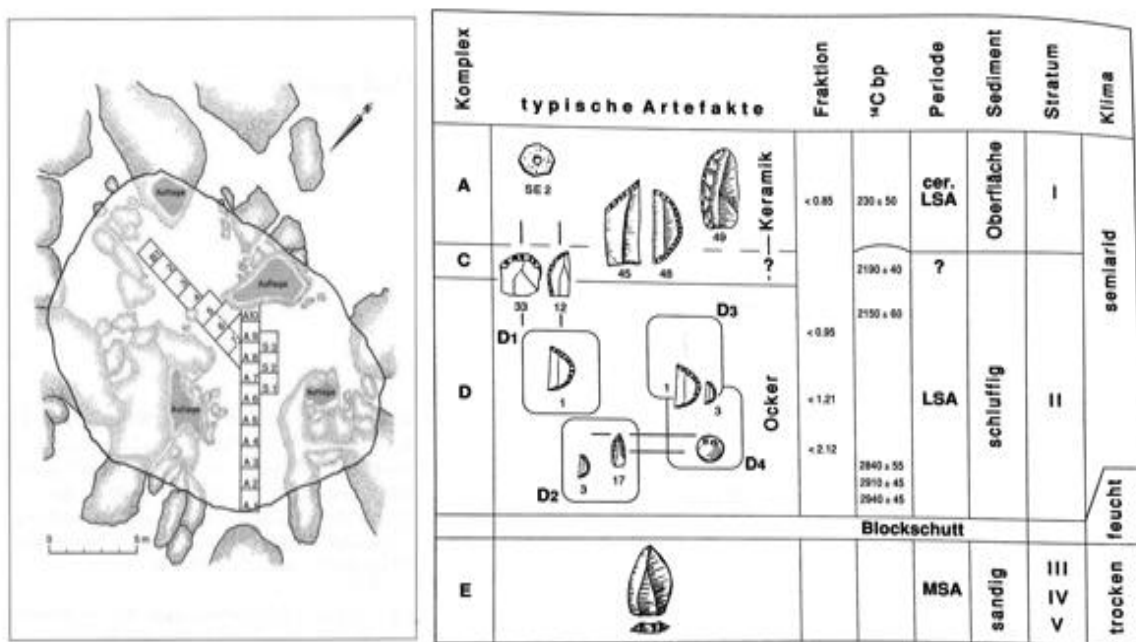


Figure 3.7 On the left is the excavation plan of Fackelträger sections and on the right is a stratigraphic summary of the site (After, RICHTER 1991:40 & 54)

Other key MSA sites in the Erongo Mountains include the site of Cymot Shelter, Stripped Giraffe shelter and Davib-Ost from Ameib farm (Fig. 3.5). Archaeological material from these three shelters were analysed and published by Sandelowsky and Viereck (1969). The MSA materials recovered from these sites consist of implements such as scrappers, flakes, cores, core axes and points made of the locally acquired materials of quartzite. The site's LSA sequences produced artefacts including pestles, potsherds, shells, ostrich eggshells, plant

remains as well as hearths that produced varied radiocarbon dates. For instance, the LSA sequence from Cymot shelter had produced the earliest LSA occupations in the entire Erongo Mountains from sediments that produced charcoal materials that were radiocarbon dated 5740 ± 110 BP and 3790 ± 110 BC. These were followed by those obtained from the Stripped Giraffe shelter between 4590 ± 100 BP and 3080 ± 100 BP, where rock paintings were also found but not recorded

A prominent LSA site in Omandumba West farm is that of Leopard Cave located south of the Fackelträger shelter (Fig. 3.8) The cave shelter was discovered in 2007 and subsequently become a subject of investigations by its principal researcher David Pleurdeau and a handful of researchers from 2009. The site's archaeological layers yielded one of the richest and intensive LSA assemblages. It has more than 4600 archaeological including lithic, ostrich eggshells and small bone fragments, as well as faunal remains (including beads and bone tools) recovered from Layers 4, 5 and 6 (Fig.3.9). The two Caprine teeth dated to 2190 ± 640 BP, $2296-2042$ BP and 2270 ± 40 BP ($2312-2155$ cal. BP) from Layers 5 and 6 are associated with abundance of lithic (not micro lithic tools) and rich wild animal bones. Such remains predate the previously known sheep remains in the southern Africa.

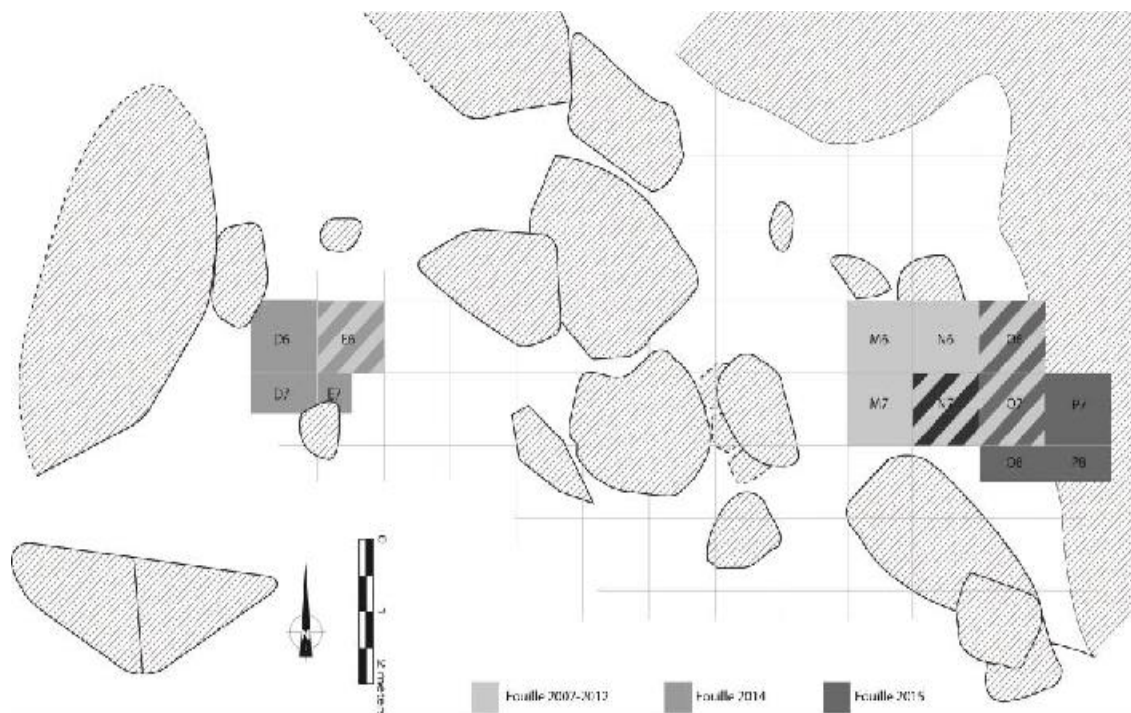


Figure 3.8 Shows the excavation plan of the site from 2009-2015, (After, Pleurdeau et al., 2012).

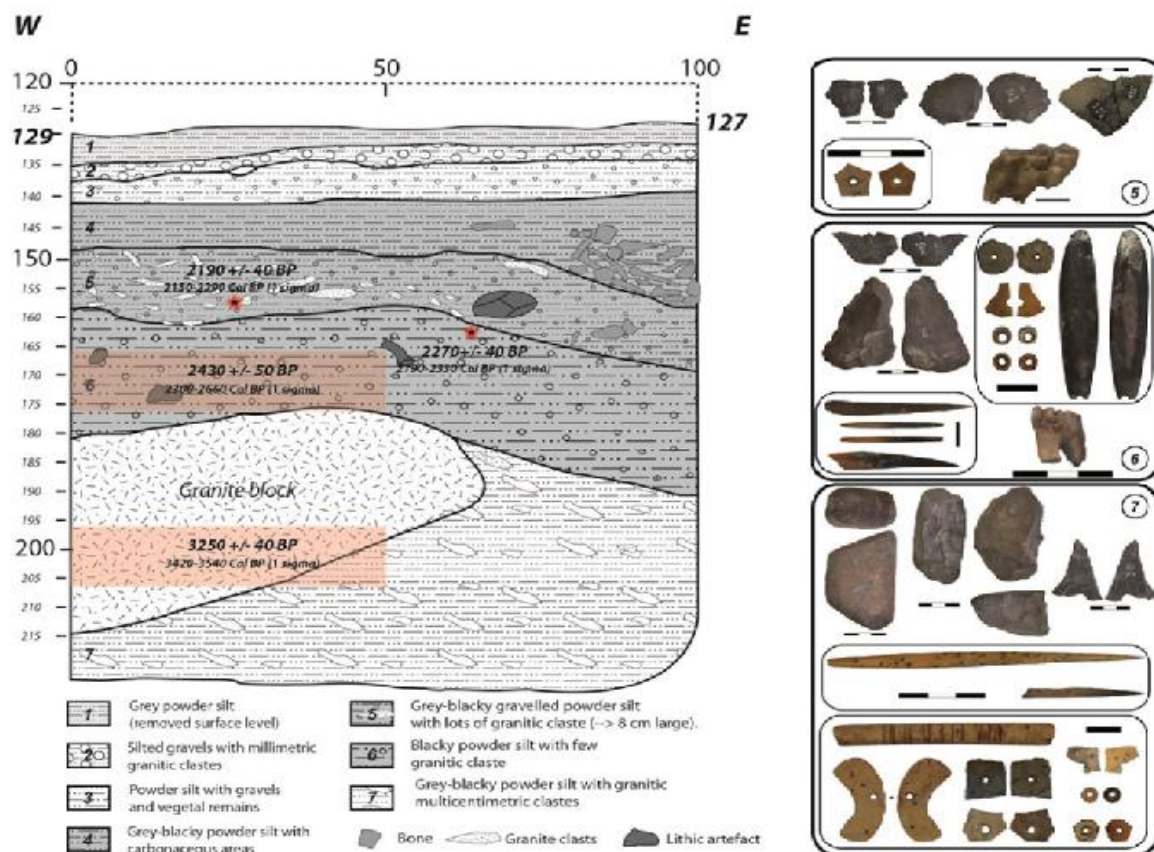


Figure 3.9 Is the summary of the artifacts found until 2012 excavations, (After Pleurdea at al., 2012:3-4)

The site's occupation reveals several periods of use dating from the end of fourth millennium BP (PLEURDEAU et al., 2016). Such occupation, according to Pleurdeau, point out to hunting activities particularly (but not only) turned towards small bovinds acquisition. Evidence from archaeological remains such as fauna and organic materials (as charcoal or burnt remains) suggests periods of intense human activity, as well as the anthropogenic ashes, which mainly composed the sediments (PLEURDEAU et al., 2012). The rock art figures at the site were never studied but are included in this present study. Pigment transformation and use toolkit has been recovered from layer dated to 3500 BP. The site, nonetheless, provides valuable information on ecological aspects and subsistence patterns of the area.

3.2.2.A brief background of rock art heritage in Central Namib of Erongo Region

Namibia is one of the areas with greatest accumulation of prehistoric rock art sites in Southern Africa (RICHTER 2002; GWASIRA 2007; NANKELA 2015). The distribution and

techniques in the rock art tradition are largely governed by the geology of the country, with the sites of highest concentrations found in the northwestern Central Namib (Fig. 3.10) below.

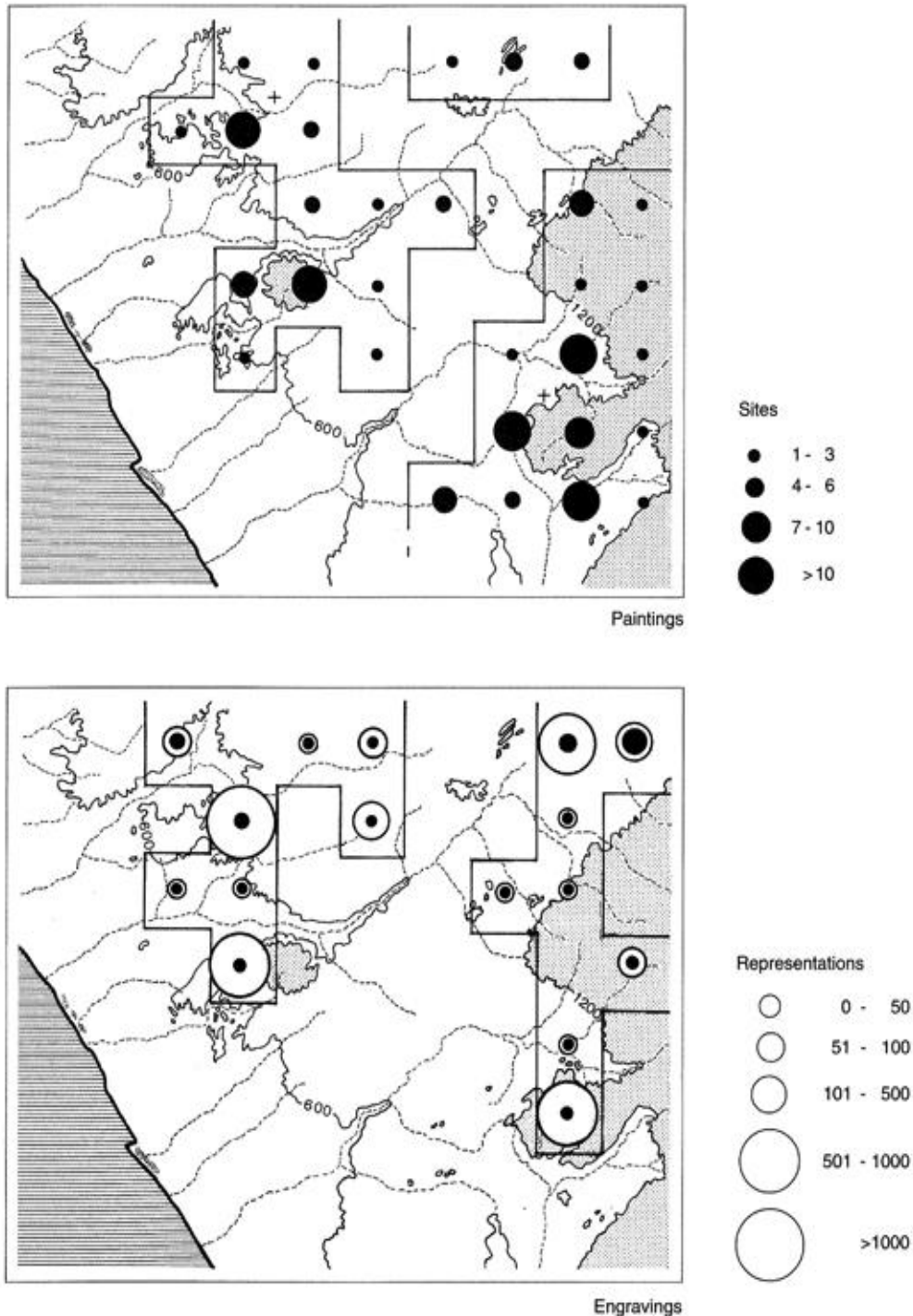


Figure 3.10 Map of west-central Namibia showing the spatial distribution of paintings and engraving sites, which were authored during the LSA period. The black symbols show the number of sites within grid squares of 25x25 km. Where rock paintings are concerned, E.R. Scherz counted a rock shelter or a group of assembled blocks as one single site. However, with engravings, he understood a ranch, a farm section or a valley as one site. Therefore, the number of individual representations per Grid Square is additionally indicated (open symbols), (After, RICHTER 2002: 52).

These includes areas of the Brandberg Mountain, which has over 50 000 rock art figures recorded at more than 1000 rock art sites (MACCALMAN 1964/65; BREUIL 1959; SCHERZ 1970, 1975, 1986; VIERECK 1967; PAGER 1989-2006; LENSSEN-ERZ 2007; GWASIRA 2011; LENSSEN-ERZ & GWASIRA 2010), the Erongo Mountains, which has with more than 5300 figures recorded at more than 108 rock art sites (BREUIL 1960; WENDT 1972; BÖRNER 2013; NANKELA 2015), as well as those recorded in the Spitzkoppe Mountain (KINAHAN 1990), most of which are registered in the country's heritage database.

Some sites have been proclaimed as national heritage sites, including the entire Brandberg Conservation Area, the site of Bushman Paradise in the Spitzkoppe Mountain, Philips Cave in the Ameib farm and Paula Cave in the Okapekaha farm, both in the Erongo Mountains. The content of the rock art varies within the country as a result of cultural factors, but several themes are widespread to indicate a geographical and temporal continuity of the rock art traditions within hunter-gatherers, herders and possibly agriculturalists belief systems and cosmologies over the period in when rock paintings were created.

Namibia's prehistoric art tradition dates back as far as the MSA period, when several painted slabs displaying a therianthrope figure (human and animal) traits were recovered from a MSA occupations at Apollo 11 Cave, in southern Namibia. These were dated between 31, 100 and 32 900 cal. BP years ago (Vogelsang et al., 2010), making it one of world's oldest paintings, in addition to the paintings discovered from Chauvet Cave in southern France (30,000 to 32,000 BP). Archaeological evidence (BREUNIG 2003; RICHTER 1991) suggests that most of the Namibia's rock art were authored during the Namibian Late Stone framework (LSA phase C2A - F) over the last 6,000 BP (Richter 1991; 2002), (see Fig. 3.4). The country's current heritage database indicates more paintings over engravings sites (see also Fig. 3.5.2), while their themes also differ extensively across the board (Fig.3.11).

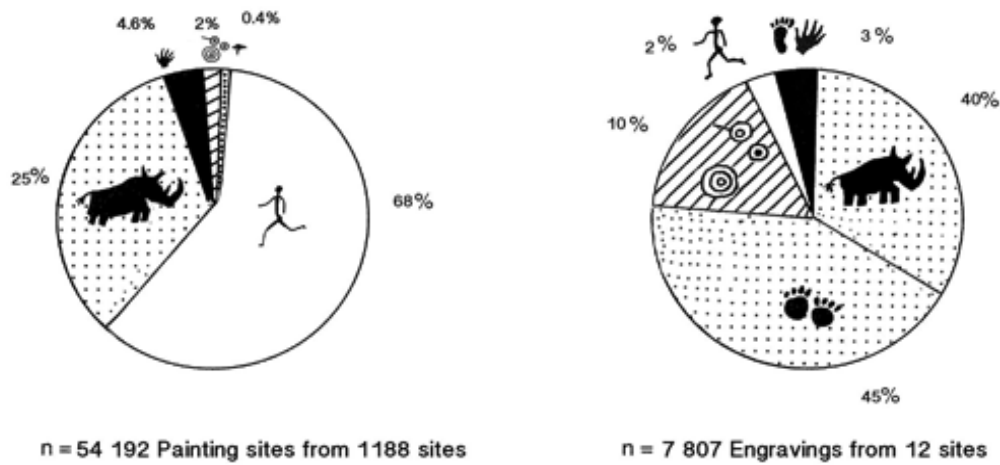


Figure 3.11 Themes of Namibian rock art (humans, footprints, handprints, animals, animal spoors/tracks, geometrical signs and trees). (CREDITS: RICHTER 2002:527), modified to reflect current records.

The record indicates that Namibian rock art is largely devoted to human representations especially within the painting. Handprints, footprints, animal spoors/tracks, geometrical signs, as well as themes that reflect landscape features such as cloudlike figures, vegetation, linear and zigzag arrangements of flecks, rain clouds are ancient forms in the rock paintings in Namibia. Following human figures are a variety of animals representations depicted in naturalistic manners with dominant figures such as that of the springbok (*Antidorcas marsupialis*) and the giraffe (*Giraffa Camelopardalis*) being the most common motive according to (SCHERZ 1986; LENSSEN-ERZ 1997), see also Fig. 3.12).

The faunal representations represent compendium of local fauna, as all the depictions are similar to those found in the same landscape in Central Namibia. Paintings were produced in a variety of techniques such as fine line where figures are outlined with a single line or outlined and then filled with lines of the same colour i.e., red, brown, black, white, orange etc., also known as monochrome paintings. There are many figures that are painted in combination of two colour (bichrome) to emphasize the feature of the subject painted, while other figures contain several colours referred to as polychrome to create depth of the painted subject, which in most cases is an animal figure. Engravings are devoted mainly to animal representations of which spoors/tracks are dominant, followed by animal figures and geometrical signs, while human representations in form of footprints and handprints are least represented.

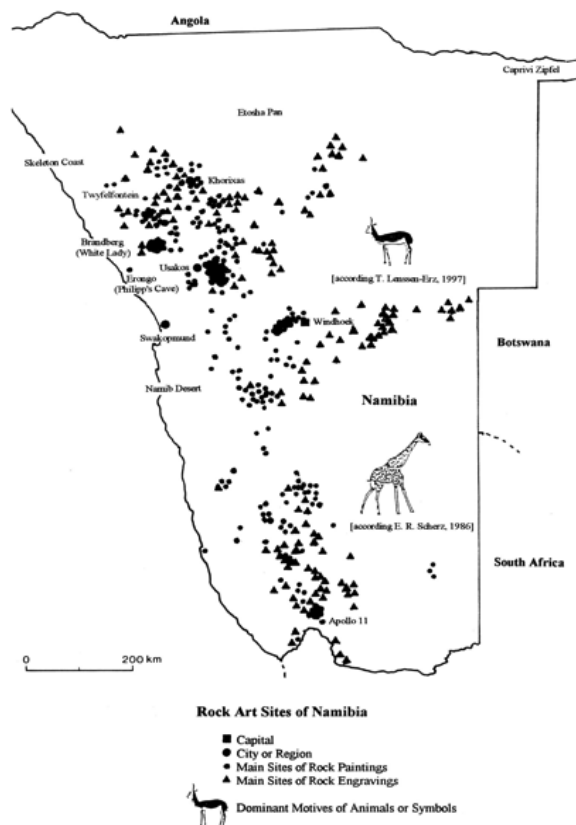


Figure 3.12 The distribution of rock art sites in Namibia, indicating the main motives in animal representations. Credits: SCHMIDT, 2001:25

Like elsewhere in southern Africa, the ethnographic records obtained from the 19th and 20th centuries (BLEEK 1874, 1935b, 1936a; LEWIS-WILLIAMS 1982; LEWIS-WILLIAMS & DOWSON 1989; LEWIS-WILLIAMS 1990) have been successfully used to interpret metaphors and symbols associated with the art of hunter-gatherers, herders and later agriculturalists. Such approaches have also been applied in Namibian rock arts (KINAHAN 2005; SMITH & OUZMAN, 2004; MORRIS, 1988). The rock art belonged to a regional cognitive tradition and religious practice in which the potency of certain animals was harnessed in ritual healing, rainmaking, ceremonials, i.e. initiations and other shamanistic related activities. Other ethnographic evidence has also given more meaning and significance to the artworks of the sites they occupies to enhance the power of a particular places in the landscape i.e. for rainmaking or initiations sites adding intangible values to a particular place (COULSON & CAMPBELL 2011). Therefore, by inferring from this ethnographic information from these sources from the hunter-gatherers and herders in southern it is possible to arrive at a more comprehensive explanations for the great accumulations of prehistoric rock art sites and their apparent occurrences at particular sites within Erongo

cultural landscape given the ecological conditions and increased aridifications of central Namib at the time.

3.2.3.A brief history of rock art research in Erongo Mountains

Rock art research in Namibia is relatively young (see RICHTER AND VOGELSANG 2008; KINAHAN 2011; GWASIRA 1998, 2012) and has developed from the efforts of amateur researchers into a large body of scientific knowledge (GWASIRA 2012). In the Erongo Mountain, rock art research resulted from the efforts and work of individual researchers (BREUIL 1957/1960; KAHN 1965; SCHERZ 1986; VIERECK 1962, 1967; BÖRNER 2013; NANKELA 2015) who had committed themselves to document Namibia's heritage. The researchers' efforts produced to date more than 5300 rock art figures from more than 108 known rock art sites recorded, from the Ameib farm, Anibib (Ai Aiba), Erongorus, Etemba, Ekuta, Okombahe Reserve, Omandumba, and Springbokfontein in the Erongo Mountains. Today, some of the recorded sites (Phillips Cave and Paula Cave) have been declared as Namibia's national heritage sites. However, these are not the only rock art sites in the Erongo Mountains. In fact, a large number of rock art sites have been reported within the entire mountains, but only few have been recorded to date (see NANKELA 2015:1420). Here, Breuil and his team documented firstly a cave shelter "Phillips Cave" in Ameib farm. The results were published in: *The rock paintings of southern Africa: Phillip Cave*. After this, Breuil documented some sites in Anibib, Omandumba West, and Springbokfontein Farms. These were published in "The rock art of southern Africa: Anibib, Omandumba Farms and Other Erongo Sites". Breuil and his team documented about 40 rock-painting sites containing approximately 3000 figures. Breuil and his team made some selective recording of the sites on these farms, preferring only sites with prominent figures despite these sites being in proximity to each other. Omitting other sites could have been a result of limited time in Erongo and it might have had something to do with his age.

French Prehistorian *Abbé* Henri Breuil (Fig. 3.13) initially documented the rock art of the lower Brandberg Mountain in collaboration of Mary E. Boyle, Dr. E.R Scherz, R. G Strey, as well as two local people whose names were not mentioned in Breuil publications (BREUIL 1959). Breuil's documentation involved digital photography (black and white) and tracing directly from the rock surfaces with considerable focus using transparency foils - and there are few differences in quality between his tracings and original figures because Breuil

did his work with an invariable exactitude and passion (Fig. 3.14). He predominantly documented the sites that were in proximity to the farmsteads, often easily accessible on foot or by vehicle, leaving many sites that were located a little further from farmsteads and in high altitudes undocumented - and again this might be attributed to his limited time in Erongo.



Figure 3.13 Abbé Henri Breuil in the Erongo Mountains. (Credit: BREUIL 1959:40.)

Not only was Breuil selective about the sites but also the figures at these sites and gave little attention to surface archaeological artefacts found within these sites or the state of conservation of the artworks in general. His research tended to focus on describing the most elaborate and aesthetic aspects of rock art and the direct interpretation of what rock art figures might represent and also establishes the typological descriptions of the figures according to style or colours.



Figure 3.14 Left are the original figures from one of the sites in Omandumba West Farm taken in 2014 and right are Breuil's traced images of the same site. (Credits: author and Breuil 1959.)

German researcher Walter Kahn (Fig. 3.15) was also one of the earliest researchers who was commissioned to research of the rock art of Etimba 2 14 in Farm Etimba that were later included in the book entitled 'Die Felszeichnungen' auf Farm Etimba in Erongogebirge, published in 1965. His publication however, was not available at the time of writing of this thesis on account of its inaccessibility. The sites Kahn initially documented were complemented further by Scherz in 1986 and subsequently Richter in 1991 documentations.

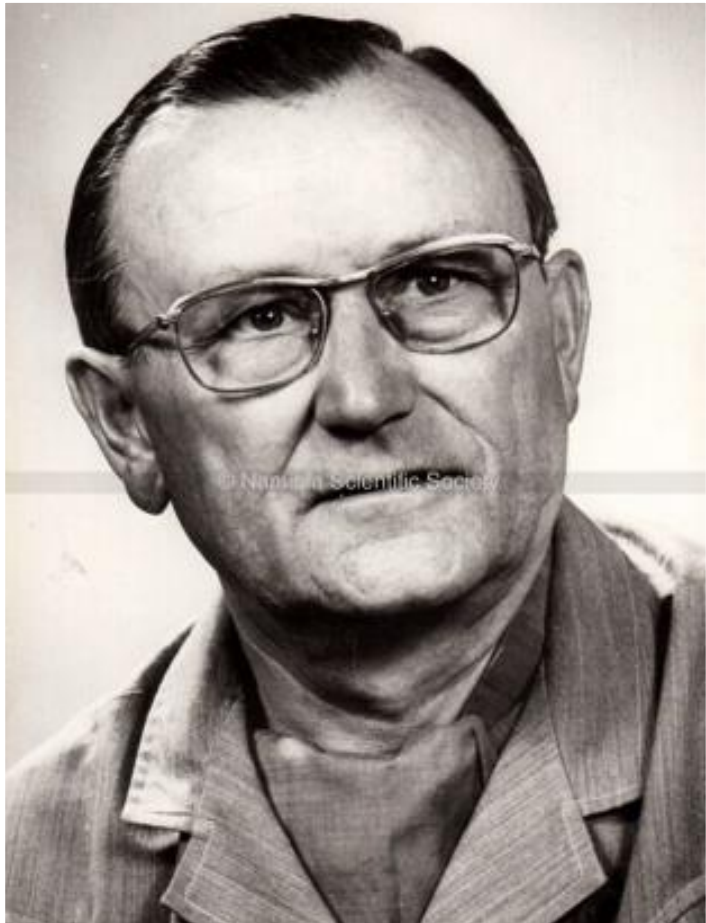


Figure 3.15 Walter Kahn (After: Namibia Scientific Society.)

In addition to Breuil's team efforts, other researchers such as Albert

Viereck led archaeological expeditions in the Erongo Mountains in collaborations with H.R MacCalman, A. Elsasser and W. Sydow, first in 1962 and later in 1989 with Beatrice Sandelowsky. Here, the researchers' main research agenda was to conduct archaeological excavations at several rock shelters (mostly probably containing rock-painting figures), including the striped giraffe in Okanguati farm, Cymot shelter in Nieuwoudt, as well as the David Ost shelter in David Ost farm. The researchers had also made visits to several sites in the Erongo including Van Wyk Shelters, Bedding Place and Phillip Cave in Ameib farm. These were later published in a preliminary report of (VIERECK 1964 and later in a supplementary report of 1989). Unlike Breuil whose sole research purpose was only to record the rock art sites in the Erongo, artworks found at these shelters were barely documented with the exception of the stripped giraffe figure (Fig. 3.16).

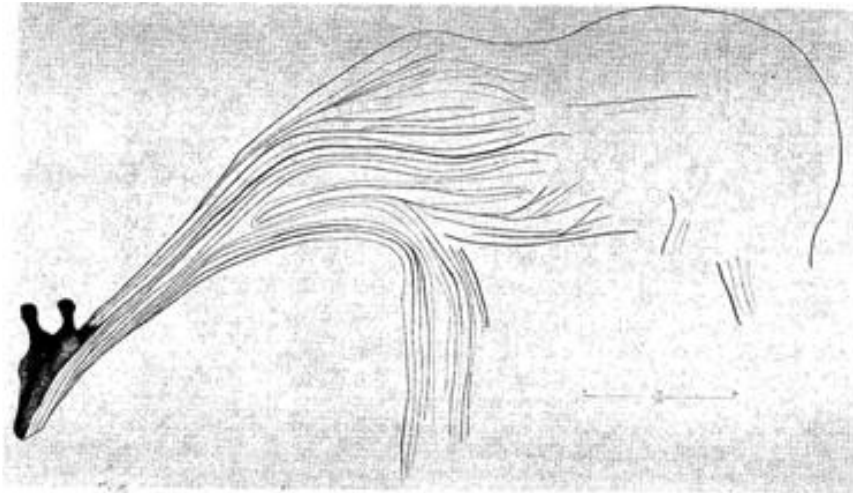


Figure 3.16 Above is a traced figure of a striped giraffe from the Stripped Giraffe Site, credits: (SANDELOWSKY & VIERECK 1989:18).

A German physicist, Dr. Ernst Rudolph Scherz (Fig. 3.17), was not only instrumental in bringing Abbé Breuil to visit the ‘White Lady of the Brandberg’ (SANDELOWSKY 2011: 772), but worked alongside Breuil and other researchers in the Brandberg Mountain and in some of the Erongo sites. Scherz was then encouraged by Breuil to develop a systematic and comprehensive survey of Namibian rock art (RICHTER & VOGELSANG 2008B: 37).



Figure 3.17 Drawing of Dr. Ernst Rudolph Scherz. (After, Scherz 1986:8)

In 1963, Scherz was contracted by the University of Cologne to record all the rock art found in Namibia as part of the Cologne rock art research program of “Felsbilder im südwestlichen Afrika“ funded by the “Deutsche Forschungsgemeinschaft” (DFG) grant of the Cologne University whose objectives were to develop a systematic inventory of Namibian archaeology (RICHTER & VOGELSANG 2008b: 37; GWASIRA 2011:3). Under this grant, Scherz developed systematic methods of recording rock art in

Namibia including the rock art of Twyfelfontein and Peet Alberts Koppie between 1930-1970s. The worth of discovery made during this period led to the development of systematic, comprehensive surveys and formal documentation of the rock art sites in Namibia. Scherz survey methodology involved the use of the GPS to locate rock art sites, the establishment of the site names and numbers as well as recording of the site content gave birth to the empirical traditions of the rock art research in Namibia (see Fig. 3.18 {i and ii}).

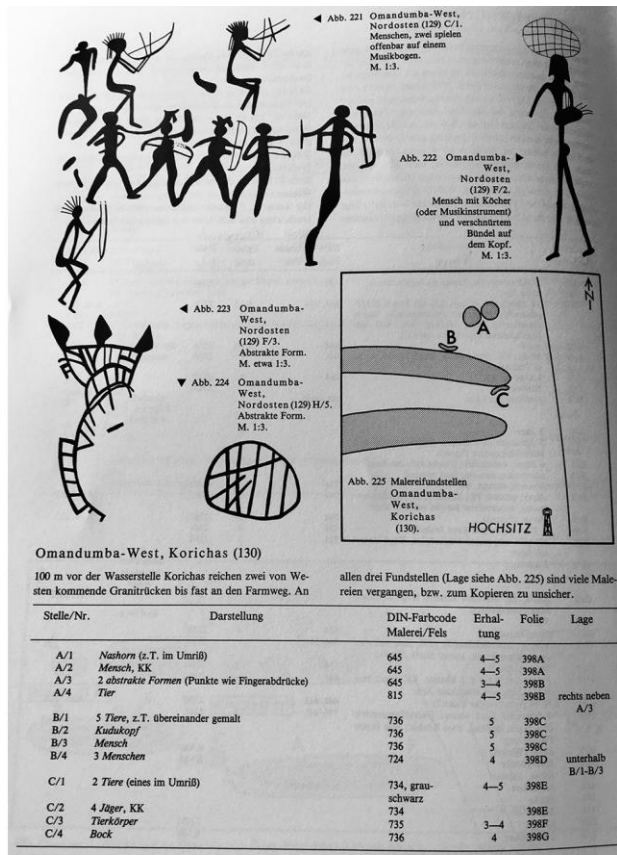
At Twyfelfontein for instance, Scherz recorded 15 small rock art sites hosting about 2500 rock engravings on the sandstone slabs. In 1952, the site of Twyfelfontein was declared a National Monument site and in 2007 became Namibia's first UNESCO world heritage site as a largest concentration of rock engravings in Southern Africa. Scherz's works at Twyfelfontein were published later on in 1975 in his book entitled "Felsbilder Südwest-Afrika. Teil 11: Die Gravierungen im Nordwesten Südwest, Cologne: Böhlau Verlag". After this, Scherz continued with the surveys and documentation of rock sites in Kunene region where he further recorded between 1,200 -1,500 the rock engravings of Peet Albert Koppie farm near Kamanjabin today's Kunene region, encompassing predominantly zoomorphic and abstract figures like circular forms and a star (SCHERZ 1975). The Historical Monuments Commission responsible for the protection of heritage site in Namibia at a time declared this site in this farm as Namibia's national monument site in 1967 and the site's information were equally published in Scherz "Felsbilder in Südwest-Afrika. Teil III: Die Gravierungen in Südwest-Afrika ohne den Nordwesten des Landes", Köln/Wien 1975.

The coming of the late 1970s oversees Scherz expanded beyond Kunene region, to Erongo region in areas such as the Brandberg Mountain as well as Erongo mountains sites including Omandumba East and West farms, farm Anibib, Ekuta, Otjongoro, Ongwati, Onguti and others incorporated in the Cologne rock art research program "Felsbilder im Südwest Afrika" funded by the Deutsche Forschungsgemeinschaft (DFG), which at a time was also funding the rock art research in South Africa by the Fock's family and the archaeological excavations of Namibian rock art and non rock art sites by W.E. Wendt (RICHTER & VOGELSANG 2008:37). It was during this time between 1968-1970 that Wendt began his work in Namibia to investigate the relationship between rock art and the archeological deposits (Wendt 1974).

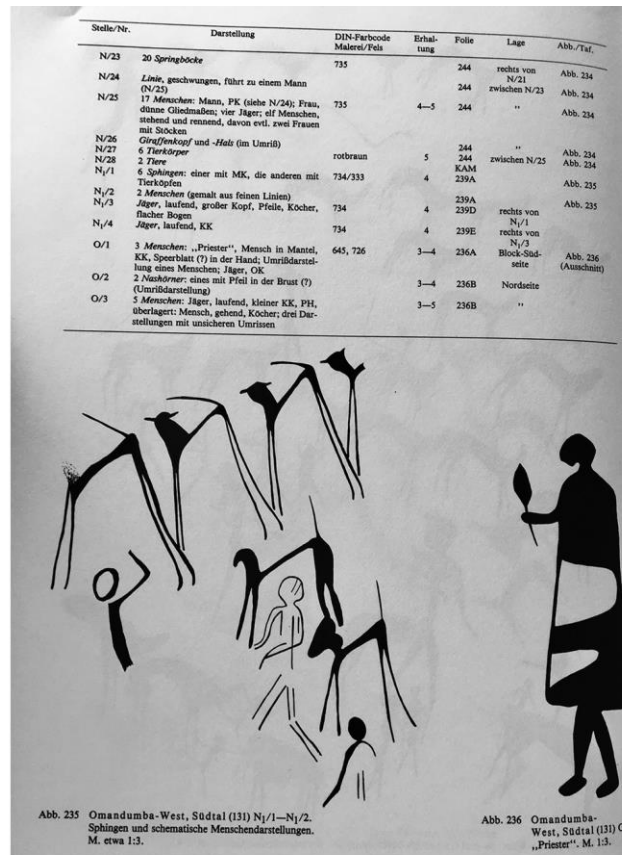
In Omandumba East and West farm, Scherz recording methodology involved dividing the farms geographically and then a systematic recording of the sites and their figures

systematically. For instance, Omandumba West farm was divided into six sections namely: Omandumba West, Grenztol, Korichas, Nord-Tal, Nordstern, Nordwest-Tal and Sud-Tal. Under these geographical locations, Scherz then assign the location number, description of the geographical location, colour of figures found at each site, the file number, layers and a short description of the identity of the figures as well as their state of conservation (see Fig. 3.18{i}) for examples. The same recording procedure was systematically replicated in Omandumba East farm sites and other sites in Namibia that Scherz documented. Like Breuil, Scherz documentation also involved digital photography and direct tracing of figures (colour as well as black and white). Most of them were digitally traced while others were directly traced with considerable focus and high precisions as the current figures at the sites. A large number of these figures are still visible today with slight conservation issues observed at some sites i.e. site OWF52a (see Fig. 3. 18 {ii} image marked 1). However, since I could not get hold of Scherz digital files of the farms, all the sites were documented in the current form by the author (see Chapter 6). Nevertheless, it is important to indicate that Scherz documented more sites in Omandumba farms unlike the previous sites records of Abbé Breuil (BREUIL 1959). His record currently suggests that he documented an approximately of 32 sites with an excess of 836 figures (SCHERZ 1986:253-271). The includes the sites such as Fackelträger, Porters Boulder, Priests Shelter, Die Strauße shelter, Scherz Fissure, Ghost Cave, Speaking kudu, Shwanz, Elephant Wall, Tuba Rock, Stray boulder and Wall, Springbok Shelter and many other sites (most of which do not have local names) but were assigned numbers by (SCHERZ 1986:253-271). All these sites were later published in his 1986 book entitled “Felsbilder in Sudwest-Afrika, Teil III: Die Malereien“.

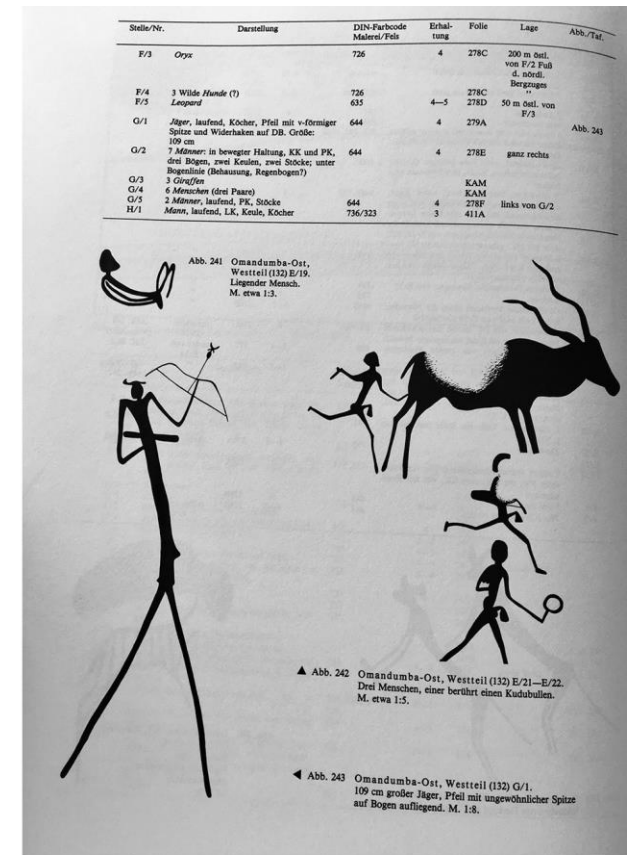
In 2011, a similar rock art research was carried out by a master’s student from the Goethe-Universität in Frankfurt, Verena Börner, who conducted a survey and documentation of some rock art sites in the Omandumba farms in order to test and evaluate the applicability of the shamanistic theory on the basis of selected rock painting sites from the Omandumba farms. Her research drew on the metaphors and symbolism associated with the cognitive and beliefs system of the hunter-gatherers of the 20th Century shamanistic theory developed by (DAVID LEWIS WILLIAMS & DOWSON 1989; LEWIS-WILLIAMS 1990). Here, Börner interpreted nine rock painting sites, including Crown Boulder, Christian shelter, Ghost Cave, Priests Shelter, Ostrich Shelter, Scherz Fissure, Monument Wall, The Kudus and the Fackelträger shelter, this out of 44 sites documented.



A



B



C

Figure 3.18 (i) Above are some of the sites systematically documented by Scherz. (A) are some of the north-eastern sites in Omandumba West. 9B0 are sites recorded at southern valley of Omandumba farm particularly site OWF56b and OWF OWF54. (C) Are documented sites in Omandumba East farm. Here are site OEF57 and artworks at OWF60.



mandumba-West, Südtal (13) M:1-M:10. Menschen, Böcke, Löwen, Giraffen, Eland und andere Tiere. M. etwa 1:8.

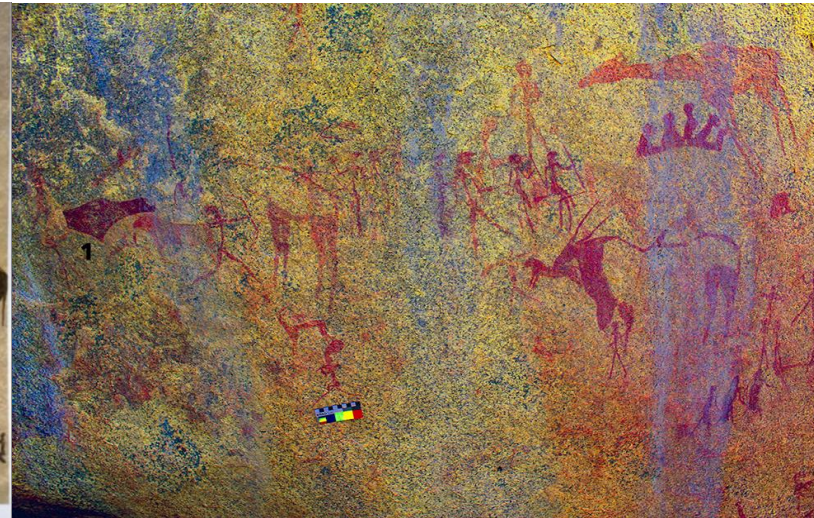


Figure 3.18 (ii) Top left is direct tracing of the first cluster at site OWF52A by Scherz (Scherz 1986) while top right is a DStretched image of the same cluster in 2015. Bottom left is another direct tracing of site OWF50 CLUSTER 1 by Scherz 1986 while to the right is a DStretched image of the same panel in 2015.

3.2.4. Rock Art research challenges

The shortage of archaeological research in Erongo Mountains and Namibia in general results from several compounding causes. This section considers three identified principal factors that caused the limited coverage of this extensive and culturally significant archaeological area. The exacerbate causes are: (1) government priorities (2) institutions inabilities and (3) academic landscape of the post-colonial present.

a. Government Education Priorities

Despite decades of extensive archaeological research in Namibia by foreign scientists and few local researchers, the discipline of archaeology heritage continue to relinquish at the bottom of Namibia's national agenda as science and mathematics continue to be emphasized by politicians and curriculum developers. Namibian archaeology researchers (KINAHAN 2009; SANDELOWSKY 2011) have over the years expressed their dissatisfactions and made several appeals against the continuous neglect of the archaeological heritage in the country, but to no avail. The political awareness of archaeological heritage is so low; perhaps it is the lowest of any part of southern African (KINAHAN 2009). Kinahan stressed that this might be attributed to the fact that the current curriculum place more emphasis on the colonial historical period and little attention to the archaeological period.

In fact, the situation in Namibia is so critical that even though the archaeological heritage is an integral part of the school education system, the curriculum covers only the archaeological record in general outline with no appropriate textbooks, few references to Namibia and little understanding of the use of archaeological pedagogies, while the museum exhibitions barely covers the subject. Equally, the University of Namibia (UNAM) has over the years provides only a short introductory module in archaeology and heritage studies as part of the History course. Such course barely meets the needs of the heritage sector nor can it give adequate support in this field to the school education system, hence archaeology students, often very few, are usually required to further train in archaeology in other countries if they are given loans (which the government through the Ministry of High Education is hesitant to fund). The value of archaeological heritage in terms of school and university teaching has therefore not been realized, and, as a result, the economically useful functions of heritage management and academic research have not materialized. This has direct implications for the National

Heritage Council of Namibia's ability to effectively carry out this national responsibility of conservations, restoration and management of Namibia's heritage resources. With the newly introduced post-graduate course in Heritage Conservation and Management at UNAM, it is hoped that such course will produce heritage professionals who will be able to bridge the gap in some of the critical heritage areas.

b. Institutions inabilities

Although the National Heritage Council of Namibia (NHC), through its National Heritage Act no 27 of 2004, is entrusted to protect, conserve, manage, and research Namibia's heritage, the institution continues to receive one of the lowest figures in the national budget and, in doing so, is unable to fund and implement management and conservation projects. A research programme exists at the institution, but it is underfunded and understaffed, with employees often overworked. Lack of heritage specialities at the NHC has made it difficult for the institution to participate and contribute towards the heritage related activities. Another challenge is the ineffectiveness of the legislature responsible for the overall conservation and protection of the heritage resources. Good laws are in place, but are not efficient; due to lack of implementation mechanisms such as operational tools measures for protecting archaeological heritage resources are limited.

c. Academic landscape of the post-colonial present

This factor is related to the academic landscape of the post-colonial present. The increased number of research publications on Namibian archaeology resulted from the efforts and dedications of foreign researchers and very few local scientists (SANDELOWSKY 2011; NANKELA 2015). In most cases, large collections of archaeological materials are often exported for short or longer periods for further scientific studies in the countries of researchers' origin. Consequently, researchers publish the works in foreign languages, resulting in a limited circulation and dissemination of published material. Many of these sources are often not accessible to the Namibian public, academics and heritage institutions that authorised the research. Fortunately, the NHC has made it mandatory for every researcher to publish his or her work in English and furnish number copies of published works.

4.LITERATURE REVIEW

This chapter reviews the literature on rock art, as well as the different theoretical perspectives of on the relationship between rock art and the landscape. The review begins with the theoretical definitions of rock art. It then considers the types of rock art, its styles and techniques of productions, its locations in the territory. Using Namibia as an example, we consider general information about rock art in southern Africa. I have also considered ethnographic analogies and the various aspects of dating of rock art. Finally, the chapter reviews those theories that are used to interpret rock art in relation to the landscape where it is found. The emphasis is on the location and distribution of rock art sites within the landscape.

4.1.Definition of Rock Art

There is no body of archaeological material without its own strengths and limitations. Rock art research is inevitably no exceptions to such complexities (Chippindale and Nash 2004:1). The term ‘rock art’, for instance, is one of the most contested and disputed generic terms in archaeological studies (see for example, CHIPPINDALE & TACON 1999; WHITLEY 2001; NASH 2002; ANATI 2003; CHIPPINDALE & NASH 2004; BOYD 2006; BEDNARIK 2007; ABREU 2012 etc.). The complexities behind this definition stem not only from the fact that the words ‘rock’ and ‘art’ are already laden with different meanings, but also on account of the varying morphological forms and contexts of this material culture. The phenomenon of rock art is one of the prominent surviving remnants of the archaeological record in humankind. Rock art is found on every continent except Antarctica.

Despite the difficulties in defining it, researchers had agreed that rock art is far greater than its definition. As Simões de Abreu noted, “the two words have no chronological, aesthetic, artistic, cultural or other connotations. It is a widespread and diverse phenomenon and its origins are in the emerging cognitive and capabilities of the human species (BEDNARIK 2001). Indeed it functions as a “window’ for the extraordinary life of our ancestors” (ABREU 2012:31). For that reason, in our thesis, I shall take the term rock art to encompass any artwork performed or carried out on rock surfaces. Renowned rock art researcher Bednarik, whose definition has also been adopted in the IFRAO glossary, defines it as a “[n] on-utilitarian anthropic markings on rock surfaces, made either by an additive process

(pictograms) or by a reductive process (petroglyph)” (WHITLEY 2001:202). However, Whitley has suggested a simpler and more generalized terminology. Rock art is now taken to mean “[a]ny painted, drawn, engraved, incised, scratched, pecked, or carved images on natural rock landscape surfaces” (2001:833).

4.2.Types of Rock Art

Traditionally, rock art has been divided into two main categories depending on the techniques that were used in its productions, namely, paintings and engravings. Paintings are result of substances, usually pigment (organic or inorganic), being applied to onto surfaces such as those found on rocks, bones, woods or tools. It functions as a 'canvas' leaving its traces or marks (WHITLEY 2005: 3-11; ABREU 2012:31). Paintings might be composed of one color (monochrome), it might combine two colours (bichrome), or it might have more than two colours (polychrome) (see Fig. 4.1).



Figure 4.1 An example of monochrome, bichrome and polychrome figures from the Snake Rock Shelter in the Upper Brandberg Mountain

Rock paintings are easily identified on account of the traces of pigment that is left on the rock surfaces. Some paintings are more-or-less naturalistic representations. Today, most of rocks painting elements are divided into two basic design categories that describe their

morphological characteristics (FRANCIS 2001). These morphological characteristics can be (1) representational and (2) non-representational. Representational design elements resemble known entities, such as anthropomorphs (human), zoomorphs (animals) and phytomorphs (plants). Non-representational design elements in rock paintings consist of therianthropes (animal-human forms), abstract design elements such as circles and dot patterns. Other types of rock paintings include prints (handprints), beeswax and stencils. They are common in some parts of southern Africa, North Africa and in Australia (Fig. 4.2). Handprints, be they plain or decorated, are made by dipping the palm of the hand in wet pigment and pressing it onto the rock surfaces (WHITLEY 2001; BEDNARIK 1993a). They can be filled with painted patterns after the print has been made. For example, stencils in Australian rock art, are made by mixing dry pigments (such as ochre, clay and charcoal) with water and/or saliva. This is mixed in the mouth and the mixture is spat out onto the surface of the rock to create a negative image or outline of an object or body part (WHITLEY 2001).



Figure 4.2 On the left are handprints from Tassili in Algiers, © UNESCO

The second type of rock art is the rock engraving. This is produced mostly by removing part of the outer rock surface, or by taking away any part of rock surface or by cutting into the rock surface using any kind of pressure tool, i.e., a hard rock or a sharp stone tool such as quartz or chalcedony, to create a color contrast with the underlying rock (DOWSON 1992; ABREU 2012:31). Alternatively, the rock engraving can be made through indirect percussion - using a hammerstone to pound against another rock. However, engravings are

also found on rocks where there is little or no color contrast. This is similar to those that are found on different media that have also been used as a ‘canvas’, namely, wood, ochre stones, eggshells, shells and bones (Fig. 4.3). Unlike the rock paintings that are easily identified on account of the traces of pigment that have been left of the rock surfaces, some rock engravings are difficult to establish largely as a result of technique used. The artistry of some of these works is a conservation challenge. For instance, non-utilitarian cup-like hollows are the most ubiquitous and varied type of markings. Some markings look as though they have been shaped by nature rather than made by humans.

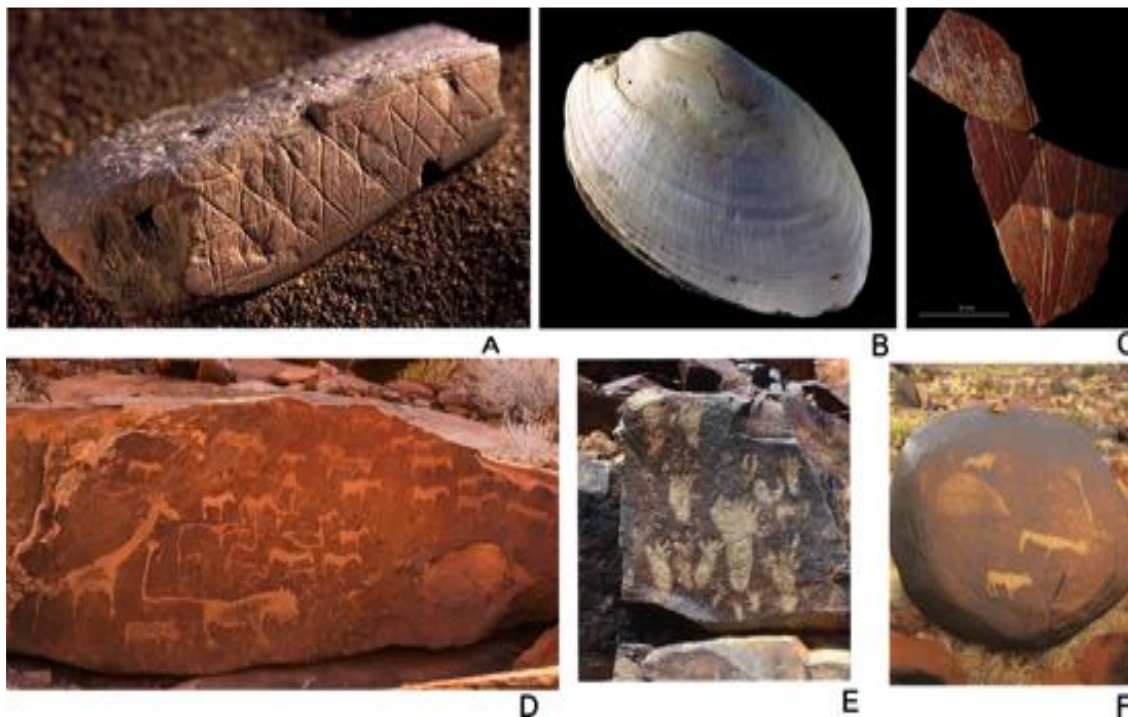


Figure 4.3 Different types of engraving media. Figure 4.3. Above shows different types of engraving media. (A) Ochre stone, Blombos, South Africa, ©Henshilwood. (B) Shell, Java, Indonesia, ©Lustenhouwer 2014. (C) Ostrich eggshell, Diepkloof, South Africa, ©Tribolo et al., 2013. (D) Boulder, Twyfelfontein, Namibia E) Boulder, Omandumba West, Namibia (F) Boulder, Wit, South Africa, ©Bradshaw foundation.

Often, archaeologists find themselves in predicament when it comes to identifying them. It becomes even more difficult to identify these engravings when they are in proximity to water sources such as rivers or when they are located near thorn bushes that scratch the rock surfaces over time and create parallel lines that often resemble figures. Some engravings are more-or-less naturalistic representations while others give the impression that they were left unfinished, and this has convinced some researchers to suggest that these differences were also differences in artistic ability and that certain artists being more accomplished or practiced than others (KINAHAN 2010). According to Francis (2006), most of rock engraving elements are divided into two basic design categories that describe their morphological characteristics:

(1) representational and (2) non-representational (54). Representational design elements resemble known entities, such as humans and animals. Zoomorphs are animal-like figures, and anthropomorphs are human-like figures. Non-representational design elements, or abstract design elements (circles, dot patterns or lines, even cupules and cup-like indentations) do not resemble known entities.

4.3.Tradition, style and techniques of Productions

In southern Africa, there are three well-known rock art traditions with distinct styles and content. These traditions came about as a result of differences in the cosmology, and the beliefs systems and rituals of the people who made them: San Hunter-Gatherers, Khoekhoen Herders and Iron Age Bantu Agriculturalists (LEWIS-WILLIAMS 1990; DEACON 2002; SMITH & OUZMAN 2004), (Fig. 4.4).

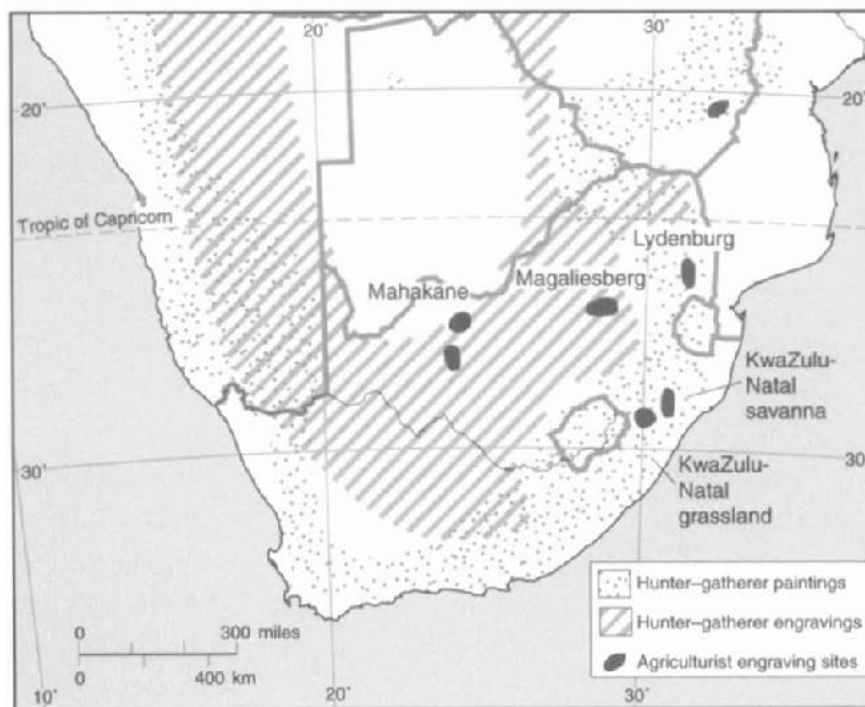


Figure 4.4 The distribution of hunter-gatherers and Iron Age Agriculturalist rock art traditions in southern Africa. (After, MAGGS 1988:18)

There are differences observed in the techniques employed, geographical distribution and themes. These represented a wide range of variations in cross-cultural interactions in the region (LEWIS-WILLIAMS 1983; COULSON & CAMPBELL 2001; SMITH & OUZMAN 2004). The hunter-gatherer tradition, which is said to be the oldest, (COULSON & CAMPBELL 2001; DEACON 2002; SMITH & OUZMAN 2004; THICKERAY 2005) is

widely spread in many southern African countries, especially in Namibia and South Africa, for these are the countries where the largest concentrations of rock art sites.

The artworks (paintings and engravings) within this tradition are primarily figurative in content (Fig. 4.5), with vast majority depicting stylized human representations, with very naturalistic animals (often in groups with clear relation to each other (Fig. 4.6), some landscape illustrations (notably as vegetation, cloudlike or linear, the arrangements of flecks, water, rains), and with therianthrope depictions associated with varieties of rituals, entoptic phenomena and shamanistic activities (LEWIS-WILLIAMS 1989,1990; LEWIS-WILLIAMS & DOWSON 1989; ANATI 1986). Hunter-gatherers tradition persisted in southern Africa until the 19th century, notably in some part of South Africa and Namibia (LEWIS-WILLIAMS 1990; SMITH 1997; LENSSEN-ERZ et al., 2005; KINAHAN 1996, 2005).



Figure 4.5 One of the elaborate scenes of hunter-gatherers activity at the 'White Lady' Shelter in the Brandberg Mountain, Namibia.



Figure 4.6 One of the elaborate scenes of animals in hunter-gatherers rock art tradition at Twyfelfontein, Namibia.

The Khoekhoen were formally known as the ‘Khoi’ or ‘Hottentot’. They were pastoralists and they probably moved into southern Africa between 2000 and 3000 years ago (proto-Khoekhoe migration). They appear to have made rock art (paintings and engravings). However, researchers are still not in agreement on whether the pastoralists contributed anything at all to rock art tradition. The reason for this is that their identity, the original migration route(s) which they took, and their ethno-economic association with the hunter gatherers in southern Africa are still debated (see SANDELOWSKY et al., 1979; DOWSON 1992; VOGEL et al., 1997; BOUSMAN 1998; SADR 2013; SMITH 2008; SPINAGE 2012; SMITH & OUZMAN 2004; PLEURDEAU et al., 2012).

Without going into the debate about their origins, archaeological and climatic evidence suggests that the material cultures of the pastoralists corresponded to the earliest occurrences of pottery and domestic animals, i.e., sheep and goats, and that such transition to herding in Southern Africa took place against the backdrop of a dramatically changing climate, characterized by a shift from arid to humid conditions and a subsequent expansion of vegetation into many regions (which might have promoted their movement into southern Africa (SMITH 2008; SHAW et al., 2003). The rock art tradition most likely to have been done by Khoekhoen pastoralists (SMITH & OUZMAN 2004; OUZMAN 2004) is categorized in three ways. Firstly, their depictions are visually distinctive from those of other traditions, dominated predominantly by non-representational geometric designs such as circles, dots, dots patterns or finger dots, lines, dumbbells and sun like figures, handprints, etc. (Fig. 4.7).



Figure 4.7 Rock art by the herders. On the left are the geometric designs at Twyfelfontein, Namibia. . On the right are human handprints at Eland Bay, South Africa © Heritage Western Cape.

Most of these designs are said to have not been associated with the entopic phenomena that are common in the art traditions of the hunter-gatherers.

Secondly, unlike the rock art sites used by hunter-gatherers, which could occur almost anywhere, the artwork made by the herders was restricted to places close to water sources, and this was attributed by the fact that they had livestock. Thirdly, there were differences in the technique of production. The rock art made by the herders is said to be bolder, less detailed, more schematic, with a smaller range of pigment (paintings), and coarse pecked marks (engravings). This was different from that of the hunter-gatherers whose artworks tended to be finer and with small peck marks. Similarly, their paintings were made by means of larger, finger painted lines and dots. Rock art by the Iron Age Bantu-speaking farmers or agriculturists is by far the uncommon of all three traditions in the region in terms of distribution (see Fig. 4.9 and Fig. 4.10). It is the youngest rock art tradition in southern Africa and so far sightings have been made only in South Africa, Angola, Zambia and Malawi (DEACON 2002; OUZMAN 2010).

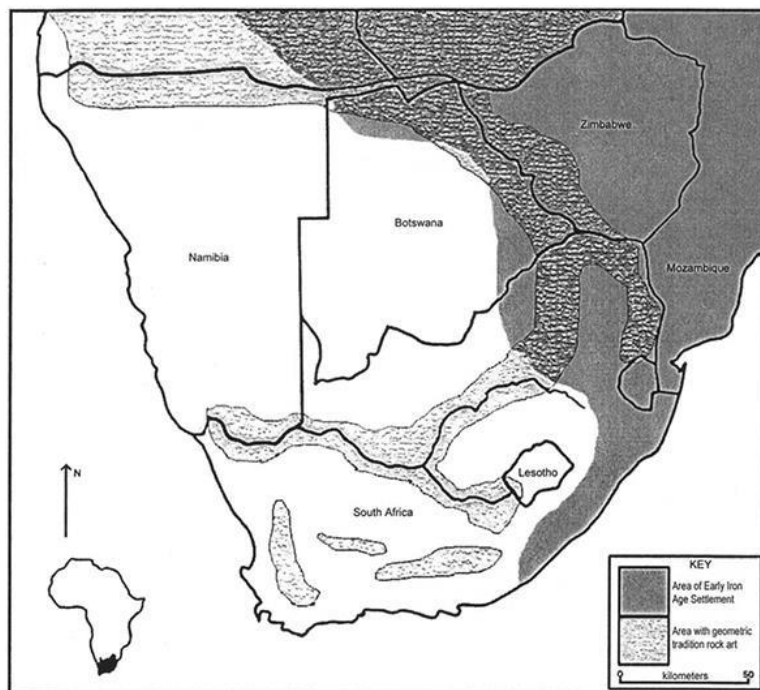


Figure 4.8 Distribution of Hunter-Gatherers and Iron Age Agriculturalist rock art traditions in southern Africa (After MAGGS 1988:18)

In the Namibian rock art context, very little record of this tradition exist, i.e., those found on the floor of the Nuab River of the Huns Mountain in the south of Namibia (Fig. 4.8). Stylistically, they are easily distinguished from other

traditions both in terms of their colours and forms. With the exceptions of some rock engravings, Iron Age rock art reveals a predominance of painted figures and it has a variety of subject matter, including the depictions of settlement layouts, humans, domesticated animals, wagons, figures, all of them done exclusively in white pigment (Fig. 4.9 & Fig. 4.10).



Figure 4.9 Left and Right, Iron Age Agriculturalists rock paintings from the Limpopo Province, South Africa ©Bass 2000, accessed on: www.wits.ac.za



Figure 4.10 Left and Right, Iron Age Agriculturalists engravings from the floor of the Nuab River of the Huns Mountain in the south of Namibia © TARA/David Coulson

In Namibia, as in most parts of southern Africa, as well as in other parts of the world, the most common substance or pigment used to create paintings was one of the varieties of ochre stones, which may have been red, yellow, black, orange, pink, brown or white ochre (Fig. 4.11).



Figure 4.11 Different types of ochre stones found in Namibia, (After, LENSSEN-ERZ 2011)

Evidence has also shown us that charcoal and other minerals such as haematite, limonite, limestone, calcite or crushed shells, manganese dioxide, calcium carbonate, ostrich eggshell and mica were also used as raw materials in the production of rock paintings (see WHITLEY et al., 1984; BREUNIG et al., 1988; CHALMIN et al., 2003; FOUCAULT et al., 2005; GOMES et al., 2013; LEBON et al., 2014; RIFKIN et al., 2015). Southern African ethnographic evidence suggests that the pigments were mixed with a variety of binders including natural fixatives, i.e., water, ostrich eggshells, blood, egg, fat and plant juices and other substances, before the pigment could be used as a color. However, the exact recipes are not known (LEWIS-WILLIAMS 1983 *cf.* DEACON 2002).

Various objects such as ostrich eggshells, stones with natural depressions, pestles were likely have been used to hold the prepared pigments. Some of these objects barely survive archaeological records. But there are some very rare instances where materials such as pestles and pigmented stones can be recovered from archaeological sequences. This is a case at Leopard Cave/site OWF42 in Omandumba West farm where, the site's excavation yielded *in situ* pigmented grinding stone and pestles artefacts (Fig. 4.12) recovered from Layer (P7) dated between 3200 and 3500 BP (PLEURDEAU et al., 2016). The findings therefore suggest that the mode of preparation were likely to be as a result of crushing followed by a grinding. Such findings make Leopard Cave the only site, in Central Namibia, where paintings are associated with the tools dedicated to the preparation of pigments.

This site is therefore of paramount importance to try to chronologically recontextualise the rock art in relation to archaeological framework in Southern Africa which further promote the importance of documenting rock art in relation to other archaeological contexts. Such findings also provide opportunities from direct dating should the materials contain organic materials albeit in small quantity.



Figure 4.12 Stones containing traces of ochre pigments from Leopard Cave in Omandumba West Farm, (After, LAPAUZE 2016:13).

Various tools such as brushes, feathers, animal hair, sticks, fingers and even hands are said used by the rock art artists as applicators, but these also barely survive the archaeological record because of their fragility in their nature. However, although uncommon in southern Africa, there are instances where pigments were applied or fixed onto rock surfaces without any binder; these are also known as “dry painting” (LEWIS WILLIAM 1983). In this case, the artist (s) directly used a piece of colouring material, such as a piece of ochre or charcoal, to create the figure. Frequently, the result of such a method is quite distinct from that of a mixed pigment stressed (ABREU 2012:81).

In some cases, the geographical origin of raw materials used in the production of rock art can be locally sourced in the same geological and geographical areas where rock art sites are found. This is a case for Omandumba paintings as outlined in Section C of this thesis. There are also instances where such materials could have been acquired from other areas through secondary means such migration and exchange of materials, given that the rock art producers

were nomads. This can provide an insight into migration routes, and trade of ochre between different communities across the landscapes.

Even though Namibia has the densest known concentration of rock painting figures in Southern Africa, there is very little scientific study made in establishing the geographic origin of pigments used in the production of paintings. The only available scientific study for instance (RIFKIN et al., 2016) has however, established through pigment analysis that black pigments derived from manganese and charcoal as main coloured materials used to produce black pigments on Apollo 11 stone plaques while red pigments correspond to processed ochreous shale. And such study is yet to determine whether the coloured materials derived from local geological contexts and outsourced somewhere else as it has been established that the plaques originate from different geological context. It is believed that colouring materials used in the paintings of other well known area such as Brandberg and Twyfelfontein are locally sourced, yet, no scientific study has been carried or perhaps such evidence is inaccessible at a time of this thesis.

The established rock art traditions in Southern Africa resulted from the differences in the, cosmology, economic systems and belief systems of the hunter-gatherers, herders and agriculturalists. This has been evidenced from the region's ethnographical studies and typological studies of rock arts in form of the content, techniques and spatial distributions of the rock art. While ethnography has provided not only the insights in differentiating these three traditions and the possible meaning of rock art, style, on the other hand has been used by researchers in studying the spatial variation of rock art. Some researchers even believe that 'Without style, we have nothing to talk about' (WHITLEY 1990: 23). But style is also a big challenge. For a start, rock art researchers are not in agreement on what style is. The interpretation of style varies from one research theme to another and the debates on the use of style in rock art and archaeology have been widely chronicled (see CONKEY 1978; CONKEY & HASTORF 1990; HODDER 1978, 1979, 1982; WIESSNER 1982, 1983, 1985; SACKETT 1982, 1985, 1986; GAMBLE 1982; JOCHIM 1983)

In southern Africa for instance, in addition to differences in cosmology, economic systems and belief systems of the rock art producers, style has been used to delimit boundaries of the rock art producers by means of linguistics analyses, cultural and geographic variations (PETERSON 1976: 61; LEWIS 1988: 85) and political terms. However, these stylistic

findings are equally questionable given the fact that two different styles do not necessarily point to different societies. As Ndukuyakhe Ndlovu (NDLOVU 2009) point it out that a society may have more than one style as a result of social class, gender and function among its members. It is also possible that two different social groups might share the same geographic space and therefore, there is a high potential that a particular style may emerge (HODDER 1978). It is therefore difficult to confidently identify rock art producers using style to demarcate social boundaries as style could also result from technical limitations.

Boundaries especially between hunter-gatherers and herders in Southern Africa are still blurred particularly when both material cultures exist in the same geographic landscape such as Erongo. Archaeological evidence at Leopard Cave/site OWF42 suggest has convincingly indicated that there seem to be no match between the painted animal (game) species on the cave walls and the Caprine remains of what appear to be a goat or sheep (domesticated animal) recovered from one of the excavated layer of the site. This argument is supported by other excavation records from other parts of Southern Africa, where the animal bones recovered do not always have directly link painted or engraved animals (See LEWIS-WILLIAMS 1972, 1974; MAZEL 1989; DEACON & DEACON 1999).

In Omandumba however, this phenomenon has only been noted in this context. Such differences might be explained by the possibility of the hunter-gatherers acquiring the domesticated animal from other groups - herders as postulated by Pleau et al., (2012). Nonetheless, based on the established stylistic typology of rock in southern Africa as per (LEWIS- WILLIAM 1983; ANATI 1983 LEAKEY 1983; MASAO 1979; COULSON AND CAMPBELL 2001; SMITH & OUZMAN 2004; EASTWOOD & SMITH 2005; OUZMAN 2004), the stylistic typology of the three traditions has been summarized below:

A. Artworks by Hunter-Gatherers:

1. Fine line paintings in red, yellow, brown ochre, or black charcoal, hematite or manganese made by a fine instrument or brush by means of the following techniques:
 - Outline of a figure with a single line
 - Outlined figure with its interior filled with same color or slightly different colour
 - Monochrome figure with colour blocked in

- Bichrome, painted with two block of colours in the same figure
- Polychrome in which three or more colours are used in the same color
- Shaded polychrome whereby several colours blend into each other to create depth and shading.
- Handprints and finger-dots

B. Artworks by Herders

- Handprints (plain or decorated)
- Monochrome red, black or (yellow rare)

C. Artworks by Iron Age agriculturalists

- Stylized designs of human, with depictions of domesticated animals, historical objects in monochrome white.

The typology of rock paintings and engravings of hunter-gatherers therefore comprised only of the fineline paintings as summarised above, these have also been illustrated in (Fig. 4.13 & Fig. 4.14) with examples from Namibia and South Africa.

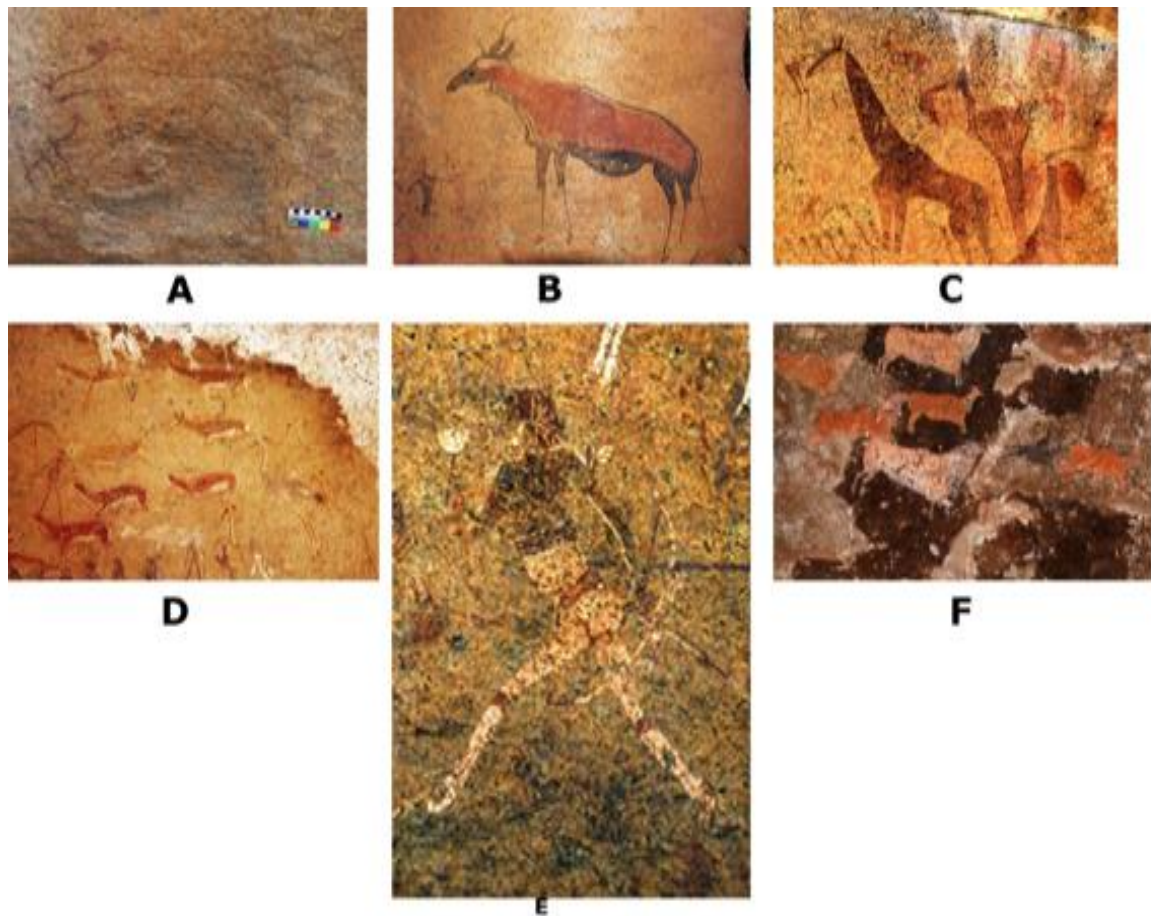


Figure 4.13 Various styles and techniques in rock paintings (A) Outline, no in fill, Omandumba West, Namibia, (B), outlined, filled in with two colour, Brandberg, Namibia (C) Monochrome, Omandumba West, Namibia (D) Polychrome (two colours), Brandberg, Namibia ©TARA/David Coulson (E) Polychrome (two colours), Brandberg, Namibia (F) Drakensberg, South Africa ©UNESCO

The typology of rock engraving comprises those that have been abraded and polished, pecked (deep or light/shallow), have used a false relief technique, have used a false shading technique, have been incised, scratched, stencilled (Fig. 4.13). The abrading technique also called “polissoir” in French, meaning polished occurs when a rock surface is scratched in continuous motion with a sharp tool or instrument thereby removing rock particles. This is achieved through rubbing or by means of a smoothing motion to create what is called ‘flat polishing effect’, i.e., the Dancing Kudu, Tywfontein in Namibia. In most cases, the engraved figure (s) is rather shallow and not very deep (ABREU 2012:100). This form of engraving technique is one of the uncommon techniques in the antiquity of Namibia engravings but it is found on almost every engraving site but in small quantity.

The pecking technique is one of the predominant engraving techniques in Namibia. It generally involves rock surface being removed using a hammering motion to define the outline, either leaving or removing the rock cortex intact so as to define the subject (ANATI

1976) with a pointed or sharp hammering tools or a mere stone and producing individual peck marks, which vary in depth and size but are often round shaped to form a desired figure (NASH & CHIPPINDALE 2004:111). Furthermore, pecked marks can also be pecked extremely close to each other or even overlapping. This is often referred to as “deep, dense or compact pecking” and when the distance between peck marks is greater than the size of each one, which is called sparse or shallow pecking (ABREU 2012:97).

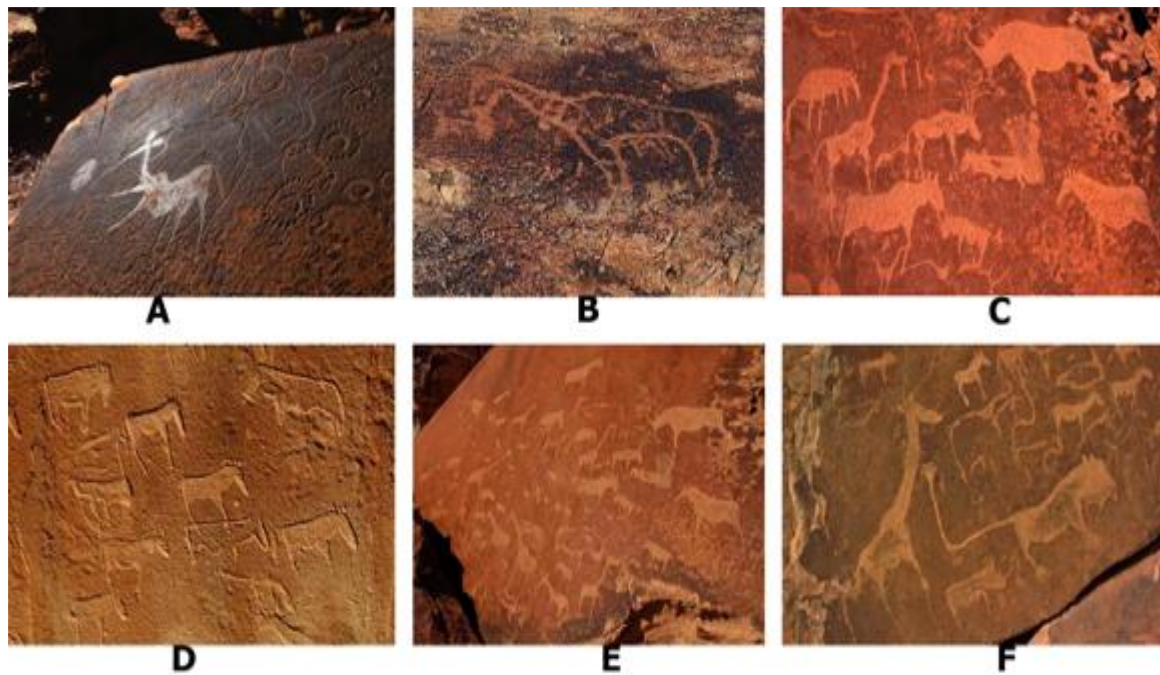


Figure 4.14 Different types of engraving techniques in Namibia. From Figure 4.14 above, (A) Twyfelfontein, Polishing (B) Peet Albert, Outline-no in filled, (C) Twyfelfontein, Deep Pecked (D) Twyfelfontein, False relief technique (E) Twyfelfontein, shallow pecked (E) Twyfelfontein, false shading technique.

The scratching technique occurs when a rock surface is removed or cut through a non-repetitive scraping motion, normally in a straight movement, in single or multiple lines together to compose a figure (ABREU 2012:106). Other forms of engravings are the cupules and grooves found in many part of the world (see VAN HOEK 1997; MARK & NEWMAN 1995; ORTIZ DE ZÁRATE 1976; SCHOBINGER 1997; COULSON & CAMPBELL 2001; MCCARTNEY 2004).

Cupules are commonly pecked pits, which form a kind of ‘cup’ mark on the rock surfaces (boulders, platforms and rock walls). Cupules are often arranged to cover vertical surfaces in orderly, tightly packed rows (BEDNARIK 1993a; TACON & CHIPPINDALE 1994) and are often arranged to cover vertical surfaces. In some part of the world, cupules are normally referred to as “pits”, ‘hollows’, ‘cup marks’ and sometimes ‘pot-holes’. Geoglyphs are also

type of engraving formed as a result of piling cobbles and small boulders into a pattern on the ground surface, thereby creating a positive image. Examples include the arrangements in the shape of praus (Indonesia or Macassan fishing vessels) in northeast Arnhem Land.

4.4.Dating Rock Art

Establishing a chronology is one of the vital components in rock art studies, but generally remains difficult to achieve according to K. Butzer (BUTZER et al., 1979). R. Bednarik (BEDNARIK 1996) and P. Tacon & C. Chippindale (TACON & CHIPPINDALE 1998). This is attributed to various factors, including the fact that prehistoric paintings lack organic pigments or binders, which means that there is no basis for the build-up of natural Carbon-14. In some paintings where suitable materials such as limestone, ostrich eggshells (white pigment), chalk or charcoal pigments were involved, radiocarbon dates can be obtained. However, this too, has its own limitations, because of possible organic contaminations (tools used) and because the sample size can only be very small otherwise the painting will be damaged. Rock engravings inherently difficult to perform direct isotopic dating on because they are mostly found in open-air sites and not in the usual archaeological contexts, which means that it is challenging to date the rock engraving in associations with other artefact assemblages (BUTZER et al., 1979). Namibian engravings artworks are exclusively found in open-air sites.



Figure 4.15 Apollo 11 slabs, Credits: The National Museum of Namibia.

There are some instances, still, where both rock paintings and engravings (painted or engraved ochre stones or bones) as well as portable art, can be found within certain stratigraphic layers that are also cultural. In such cases, the artworks can be dated in associations with the archaeological assemblages. Again, when dates are obtained, they do not necessarily produce the actual age of the artworks, but the period in which the artworks was likely abandoned, stressed Goodman Gwasira (GWASIRA 2012). In these cases, it is possible that the artworks could either be older or younger. One classical example of southern Africa's oldest artworks is the 'art mobilier' from Apollo 11 in southern Namibia (Fig. 4.15). These were recovered from the Middle Stone Age assemblages dating 25,000 BP according to (WENDT 1976). It is possible that the artwork could even be older as established by VOGELSANG et al., (2010). New dates from the layer in which the painted slabs were found are between 31, 100 and 32900 BP (Ibid 2010: 202), dates that are supported by OSL data from this layer, which is around 30, 000 BP (GWASIRA 2012:5).

Apart from the Apollo 11 slabs, other stone materials containing traces of pigments recorded in archaeological layers in Namibia. For instance, the several fragments that had been chipped off or were exfoliated from a painting at the rock shelter Amis 10 in the Upper Brandberg (BREUNIG 2003:77), which is dated between 2760 ± 50 years before present (RICHTER & VOGELSAG 2008b: 42). The second example is that of the engraved ochre stones from the Blombos Cave in South Africa. This was recovered from the Middle Stone Age deposits dated between 100,000 and 70, 000 years BP (HENSHILWOOD et al., 2011) as shown in (Fig. 4.16).



Figure 4.16 Engraved ochre pieces from Blombos Cave, Western Cape, South Africa.

Despite difficulties establishing the scientific age of rock art by means of the associating with other datable archaeological deposits, varieties of methods do exist for placing artworks in time. These include relative dating or indirect methods such as assessing the degree of lichens, stylistic typology and superimposition, weathering, patination and inter-site patterning (BUTZER et al., 1979; HYDER 1989; KEYSER 1992; BEDNARIK 1992, 1997, 2002; JONES 1981). However, such dating methods are not without controversy either. (JONES 1981:62) proposed that it is possible to date lichen that had encroached upon rock art, which also meant that the rock art older was than the lichen. This is extremely difficult given the varieties of microenvironments in which rock art sites are found. For instance in Namibia, rock art sites are in open spaces (open-air sites) and in arid environments, and lichens are not really relevant to rock art here. Added to the drawback is the fact that is that recording techniques, i.e., tracings usually result in the removal of the lichen from the rock surfaces.

Chronological classification on the basis of stylistic typologies, superimposition and techniques is still largely applied in many southern African countries including Namibia (BUDZER et al., 1979; ANATI 1986, BREUNIG 1991; DEACON 2002; RICHTER & VOGELSANG 2008). Such analysis suggests that a change in style is a function of time, and that a change in style reflects a change in the material culture and that of an artist or artists. In determining which style is older, some researchers have found it equally difficult to detect elements of superimpositions in rock paintings and more especially in engravings given the fact that figures may have even been separated by minutes or even seconds when they were produced (BEDNARIK 2002). Bednarik argued that aspects to consider when determining which of the figure preceded the other depended on the location, climate and environment and other factors in which rock art sites are found. The alternatives are microscopic studies, but such diagnoses make it is hard to draw strong conclusions and will continue to be elusive (BEDNARIK 2002; 4; BREUNIG 1991:118F).

The aging process of rock surfaces has been considered relevant in establishing the ages of engravings. Patination and the weathering of rock surfaces as Robert Bednarik (BEDNARIK 1992, 1997, 2002) suggest, through micro-erosion analysis can be applied. Bednarik suggests that observations can be made through changes in rock surfaces, such as the loss of mass, e.g., erosion or the result of chemical or physical changes. However, such techniques have been questioned. In the southern African context (see for instance, ANATI 1960, 1961, 1963,

1968, 1996), its validity has been equally restricted on account of variations in climate, topography, surface geometry and chemical environment. Hence, such methodology did not produce sufficient results. Ethnological analysis has also contributed to the reconstruction of the daily life of the inhabitants, their activities, the socio-economic structure, the belief systems, the religious practices and rituals for rain-making, healing and other shamanistic activities, the pattern of symbolism reflected in the artworks, and this is particularly relevant to in most part of southern Africa (BLEEK & LLOYD 1911; VINNICOMBRE 1976; LEE 1979; BARNARD 1992; LEWIS WILLIAMS 1981,1990; LEWIS-WILLIAMS & DOWSON 1989; SMITH 1995,1977; COULSON & CAMPBELL 2001 etc.). It has led to the identification of the three-rock art traditions discussed previously.

4.5.Rock Art and Ethnography

The Southern African region is perhaps one of the areas in the world where there is a wealth of ethnographic evidence that associates the symbolism and belief systems of hunter-gatherers. These were obtained during the 19th and 20th centuries thanks to the pioneers work of Wilhelm Bleek and Lucy Lloyd (BLEEK & LLOYD 1911; see LEWIS-WILLIAMS 2000: 1-41 for a review of the collection) who conducted research among the /Xam-speaking people in the Cape Colony. Their works, together with ethnographical data obtained from the San groups living in the Kalahari (THOMAS 1959, 2006; MARSHALL 1976, 1999; LEE 1979, 1984, 1993; BARNARD 1992; KATZ 1982; BIESELE 1993), provided insight into the meaning and context of rock art. This has consequently been used to deduce many metaphors and symbols in hunter- gatherer rock art in southern Africa, even in countries such as Namibia where no historical records or ethnographic accounts of the San were ever recorded.

The understanding of altered states of consciousness, and its role in shamanism in rock art by David Lewis-Williams and Thomas Dowson (LEWIS- WILLIAMS 1990; LEWIS-WILLIAMS & DOWSON 1989) has also been successfully applied to many examples of hunter-gatherer rock art in southern African (see for example FROBENIUS & DSANGARA 1931; GOODALL 1959; HUFFMAN 1983; MASAO 1979; ANATI 1986; GARLAKE 1995; OUZMAN 1998, 2010; KINANAH 1989,1990, 2005; ZUBIETA 2006; HUBBARD & MABREY 2007).

Today, it is well understood that hunter-gatherer rock art was created as part of the religious practices for rainmaking, ritual healings and other shamanistic activities. These practices for instance, involves altered state of consciousness that enabled healers or shaman or medicine men to access the spirit where gods or powerful being or certain animal were located and their power could be harnessed their supernatural powers for the purposes of ritual healing/cleansing, restoring faith in the community, bringing hope to the people by delivering a successful hunt, initiations, and rain-making. The practice ultimately resulted in the wider distribution of rock art in many southern African regions where there was a broad similarity in cosmology among the hunter-gatherers, with variations observed in the way that shamanistic practices were seen and used and the metaphors that conveyed the in rock art in the region (DEACON 2002).

The ethnographic record among the /Xam San community had also led to an understanding of the dominance of particular animal species in rock art (MARSHALL 1976; LEWIS-WILLIAMS 1981; KATZ 1982; LEE 1984; GUENTHER 1986). Lewis-Williams argued that the animals do not represent so many individuals - natural animals - as they do spirit animals. They represent a broader animating spirit – a supernatural potency - that permeates nature, an immanent realm that shamans attempted to enter through the trance dance and which is depict in the rock art (LEWIS-WILLIAMS 1981). The eland, for example, is said to be associated with certain rituals, i.e., the initiation of boys and girls, and its role in healing and rainmaking activities. It was apparently understood that associating with the eland could bring the shaman closer to the gods and their supernatural powers. In his (or her) trance, the shaman would then feel as though he was transformed into an eland. This might explain the dominance of eland/human figures (therianthropes) in the oldest rock paintings in South Africa (LEWIS-WILLIAMS 1981). In Namibia, for example, the eland is less predominant and is likely to be substituted by the springbok and giraffe (SCHERZ 1986; LENSSEN-ERZ 1997), which imply a regional variation in the ritual significances of certain animals. Other analogies are related to the potency associated with certain animals, i.e., the large and powerful game such as rhino, giraffe, large antelopes and elephants (OUZMAN 2010).

Globally, South African ethnographies had also proved effective in identifying the sources of some of the metaphors found mainly in Palaeolithic rock art in Western Europe (CLOTTE & LEWIS-WILLIAM 1996) and the United States (WHITLEY 2000; SWARTZ 2000; LOUBSER 2006). Considering effectiveness of these analogies, it is very likely that the

methods are widely applicable, particularly in regions with relatively recent rock art and a dearth in ethnographic accounts, such as northern Europe and parts of Asia. Although diverse ethnographic sources are widely available, interpreting and finding the true meanings of rock art is still somewhat tenuous basis for reconstructing the past behaviour and beliefs systems of hunter-gatherers, and that is because hunter-gatherers would have had a different world-view. For example, Ross has argued that in order to understand the context of the rock art by the hunter-gatherers it is vital to comprehend what was fundamental to all hunter-gatherers cultures: their intimate relationship with the land they lived on stressed, M. Ross (ROSS 2001:545-546).

According to Ross, this relationship with the natural land, and the observation and perception of the environment, is observed in rock art. Hunter-gatherers, being nomads in nature, used sophisticated cultural navigational strategies to journey across the landscape. Therefore, it is likely that rock art sites are locations of mythical importance, and that, cosmological structures, wisdom teachings and ritual symbolisms in a specific landscape or site might be revealing the meaning of the rock art of hunter-gatherers. According to him, there is connection between the physical location of the rock art sites in the landscape, the geomorphological variables (caves, rock shelters, walls and ceilings, rock outcrop and cliff faces) and the rock faces. These are thought to be permeable separating realities. “The cracks and features of the rock are incorporated into the rock art as representations of the spiritual belief system”, emphasised (ROSS 2001: 547).

Furthermore, there are instances where hunter-gatherers rock art reflects several depictions that have been interpreted as landscape features. Two classical examples in southern Africa are rock paintings from Zimbabwe (see GOODWIN 1946; COOKE 1959, 1969; WILCOX 1963,1984, 142; WALKER 1996, 2009) and Namibia (see MASON 1958, 357–368 and LENSSEN-ERZ 2001, 1996) where phytomorphs (trees), cloudlike figures (Fig. 4.17) and linear arrangements of flecks are seen as representations of vegetation or water which seems to mirror the geographical contexts of these cultural landscapes.



Figure 4.17 Arboreal and cloudlike representations in rock paintings sites. on the left is Omandumba West Farm, and on the right Anibib/ Ai Aiba Farm, both in Erongo, Namibia.

While “oval forms firmly nested together like sausages in a packet”(MAGGS 1998:16-17) were understood to represent boulders on the granite hills. In these instances, researchers seemingly agree that the interpretations of these features are likely to reflect the spatial divisions of territories associated with the nomadic lifestyles of hunter-gatherers (MAGGS 1998). However, in Zimbabwe, the landscape interpretation of the ovals and flecks has been rejected by researcher like Peter Garlake (GARLAKE 1995), who argued that such compositions represented a graphic and spatial dimension of the cosmological world of the hunter-gatherers. Therefore, their compositions signifies different aspects of mystical potency also, metaphorical 'maps' of journeys made by shamans in states of altered consciousness. Therefore, a shaman apparently sees a system within the paintings; hence, the oval composition is the key symbol representing the seat of potency (MAGGS 1998).

The complexities in the ethnographic analogies therefore indicate that the natural landscape evidently was a vital part of the hunter-gatherer art life and that it eventually influenced the spatial composition in rock art traditions and which, consequently, reflects both the physical space and the metaphysical realm in the cosmology of hunter-gatherers. In other instances, ethnographic evidence from some parts of southern Africa, (see COULSON & CAMPBELL 2001) also suggests that certain rock art sites are placed in specific locations in the landscape to enhance the power and significance of a particular place in that landscape, namely, activities associated with rituals, i.e., rain-making and initiations (DEACON 2002). The types of artworks found at some of these sites seemingly represents a variety of activities connected not only to the religious spiritual belief systems and the symbolic expression of the artists

themselves, but also to the rock art, the rock art sites and the territories beyond. Unlike the wealth of ethnographic information in the hunter-gatherers rock art tradition, very little can be said about the ethnography of the herders in relation to their rock art (MAGGS 1998; COULSON & CAMPBELL 2001; DEACON 2002; OUZMAN 2010). This is attributed to the fact that their artworks, i.e., their engravings do not depict their socio-economic activities as a result, there is little direct ethnographic information on the figures and the context in which they were made (MAGGS 1998).

Most of our understanding of them has been reconstructed through circumstantial evidence. For instance, researchers observed this in the Limpopo Valley, where a brief period of interaction between the two groups in the 1st millennium AD (HALL & SMITH 2000). In Namibia, particularly at Twyfelfontein in Namibia, the artworks (engravings) by the herders are recorded juxtaposed with artworks by the hunter-gatherers in form of concentric circles, lineals and dots, (see Fig. 4.18).



Figure 4.18 The 'Dancing Kudu Panel which shows concentric circle juxtaposed to hunter-gathers rock art at Twyfelfontein, Namibia.

Herder's paintings on the other hand, for example, the handprints and dot patterns, are believed to be linked to the desire to mark and display personal and group identity. According

to (OUZMAN 2010), it may also be that these elements are linked or related to initiations rituals and similar rites of passages.

The same thing can be said about the ethnography of rock art made by the Iron Age agriculturists whose distribution is more restricted than that of the hunter-gatherers and herders in the region (BASS 1994; MAGGS 1998; DEACON 2002; SMITH 1995, 1997). Though, little is still known and researched, the dominance of depictions of historical periods, i.e. ox wagons, men carrying guns, homestead plans, modern settlement layouts, domesticated animals such as horses and dogs, may reflect a life changing as a result of encounters with the Europeans who had arrived in southern Africa. In South Africa, many of these sites are found in hilly areas of the Limpopo province (BASS 1994). Destitute Bantu-speaking farmers might have fled to hilly areas for safety as a result of conflicts over land with the white Settlers (Ibid 1994). A similar subject matter is also depicted in the Bantu engravings in southern Namibia. The ethnographic analogies gathered from Tanzania, Zambia and Malawi according to (SMITH 1995, 1997; ANATI 1986) suggests that the series in the 'late white' rock art tradition is attributed to secret male and female initiation practices and rainmaking rituals.

4.6.Location of Rock Art

Rock art is a global phenomenon, and it is found on every continent with the exception of Antarctica (BEDNARIK 1997, 2010). So, how do archaeologists locate rock art sites? As its name suggests, anywhere where one finds a rock, one is likely to find rock art, from high elevations such as mountaintops, hills and outcrops to low elevations such as dry riverbeds or streambeds and pavements (ABREU 2012:109). See the examples in Namibia (Fig. 4.19). Their spatial distribution, placement and variability within landscapes are often determined by various factors including, but not limited to, geology, the artist's choice, the social, cultural and religious patterns and the availability of basic resources (water food and shelter) (see MCDONALD 2006:71; LENSSEN-ERZ 2012).

A rock art site, just like any archaeological site, came about as a result of decisions made by prehistoric people in relation to where they decide to live, ambush or hunt wild animals, gather edible plants, obtain raw material for producing rock art, carry out certain rituals activities and where to bury the dead. The resources on which people depended were inevitably unevenly distributed; this also holds for archaeological sites, which have limited

distributions. Despite this complexity, rock art sites are relatively predictable, especially in dry/desert environments such as the Central Namibia, where two determining factor - water and rocks - were ultimately the influencing factors in placing the sites.

This means that it is possible to ascertain areas in the landscape that are likely to have greater or lesser archaeological sites. Primary resources such as water, the availability of food (game), shelter, often determined the concentrations and distribution rock art sites while other needs factors would have been secondary. These include landscape features such as granite highlands and outcrops especially when these could be used to control the movement of game. (Fig. 4.19) provides some of the examples of such areas where rock art sites are found in Namibia.



Figure 4.19 Different landscape locations of Namibian rock art sites. Here, from the mountains areas of Brandberg, Erongo and Spitzkoppe to low elevations areas of Twyfelfontein sandstones, riverbeds and pavements in Outjo.

In rock art, geology is one of the key dynamic influencing the technique of the artwork to be produced, as well as its distribution. In Namibia, rock paintings follow the general granite formations and some other rock type in the country. For these reasons, paintings are found almost exclusively on granite, dolomite, basalt and sandstone rock deposits. Their placement in these geological settings ranges from cliffs faces, caves, rock shelters, open high walls, ceilings, open-air boulders etc. Such rock formations are widely distributed across the landscape. It is possible for an area, i.e., a mountain to have both granite and basalt rock deposits, i.e. Brandberg and Erongo Mountains. In these instances, both paintings and engravings are found in these mountains. It is also rare but not impossible to find both rock engravings and paintings executed on the same geological rock formation at the same site, as

it it's a case at the Twyfelfontein World Heritage site where both genre of artworks co-exists and executed on the sandstone deposits.

In all, the production of a rock art sites involved more than a mere application of pigments to rock surfaces or engraving on rock surfaces. The artists chose a place within the landscape where to place the figures and considered where on that surface the figures would go. They collected the pigments, prepared it them and the rock surfaces, chose the subject and applied the pigments or engraved the surface. Presumably, all these actions took place within the context of the artist's intentions - the artist's goal in mind. Today, it is these places that we are referring to as rock art sites. They vary considerably in size: from a single boulder with few painted or engraved figures to a cluster of boulders, shelters or caves with a high concentration of rock paintings and engravings.

There are many differences of rock art and rock art sites in a given landscape. These variations likely represent an array of activities connected to the artworks, rock art sites and the entire landscape. Physically, there seem to be many reoccurring features (locations) that are repeated too many times in rock art all over the world for it to be just a coincidence. Often, the landmarks are one factor while the shape of the painted or engraved surfaces another. For example, while analysing the function and symbolism in Chumash rock art in southern California, Travis Hudson and Georgia Lee (HUDSON & LEE 1984) identified three categories of power in the Chumash rock art and they were all connected with the land. According to them, "the bond between mythological event and ritual expression indicates that such sacred locations and [landscape] features were recognized by the community as a whole" (HUDSON & LEE 1984: 23). Their findings led them to conclude that shamanic sites were located in 'natural' situations that provided alignments with the summits of sacred and conspicuous features (i.e., mountain tops or valleys) and that these alignments were related to 'natural' events, especially celestial astronomical events.

In Namibia, similar evidence has also been produced whereby certain sites occupy specific locations and were perceived as "special or sacred locations", while others seemingly had no such underpinnings and were simply scattered in the landscape.

For instance, observation suggests that in sites in the upper Brandberg, some in Erongo and those at Twyfelfontein, rock art is associated with ritual and religious significances significance, which means that their distribution and concentration also suggests a centralized

supernatural power (KINAHAN 2001a, 2005, 2010; LENSSEN-ERZ 2004, 2007, 2013). In most cases, the geomorphological features of these sites somehow interact with the rock art, giving the impression that their locations were chosen intentionally. Other observations suggest that the locations of some sites and their concentration came about as a result of ecological crises, most notably in the North-Central Namib Desert. Areas with a high concentration of rock art sites have been considered as meeting places where a variety of social activities took place (KINAHAN 2001a, 2005, 2010; LENSSEN-ERZ 2004, 2007). Such observations indicate that most of the sites were located in proximity to where water and shelters were found readily available. These places were aggregation sites functioning as nodes in the landscape and where a variation in activities resulted in the concentration of rock art at these sites.

The ethnographic records from the Kalahari hunters shows that ritual activities were intensified when resources were strained, a situation which seems likely to be the explanation for the rock art sites in many areas in Namibia (LEE 1979; BARNARD 1992). Others sites have been found in places that suggest that short occupation (LENSSEN-ERZ 2007; KINAHAN 2005), others were located in hunting locales (rivers and streams) where no other archaeological finds have been found or where evidence of occupation has been recorded (GWASIRA 2012; NANKELA 2015). Their relation to other sites (living/occupied) in the same cultural landscape varies. Another aspect for consideration is the accessibility to the sites. Sites that were professed “special or sacred” often occupied high topographical locations, often referred to as ‘vantage points’, and in many cases, required physical exertions to reach them. In some situations, one is even required to crawl, e.g., those found in cracks and rock crevices in Erongo Mountains (see Chapter 6). The nature of Namibia’s terrain, notably, the Brandberg Mountain (see LENSSEN- ERZ 2000), would in many cases permit few people to access the sites. Not only are the sites small, but also because the jagged rocks interrupt the lines of view in doing so making them inaccessible.

4.7.A Landscape Approach: An Archaeological Perspective to Rock Art

Various frameworks have been used by rock art researchers to broaden our knowledge and understanding of one of the most complex yet significant body bodies in the archaeological record - rock art. These frameworks include ethnographic approaches, the shamanistic-

totemic framework, the neuropsychological model, the hunting approach, the stylistic approach, archaeo-astronomical perspectives and the landscape paradigm. Here, I have employed landscape contexts to evaluate rock art in its natural context.

The landscape approach is one of the archaeologically based perspectives in rock art research to have received much attention over the years (TUAN 1977; BRADLEY 1993, 1997, NASH 2001; 1998; TILLEY 1994, 2004; POTTER 2004; THOMAS 1996; OUZMAN 1998; INGOLD 2000; CHIPPINDALE & NASH 2004). The landscape contexts view rock art in light of what has been presented as the ‘macro-landscape’ (the location, the environment, the landscape) and the ‘micro-landscape’ of rock art (the canvas, the micro-topography, the natural features or the background of the rock art) (CHIPPINDALE & NASH 2004:21-22). However, this approach has, over the decades, received its fair share of critics from academics (see BINFORD 1982, 1983; HIRSCH 1995; DUNNELL 1992; BENDER 1993A; OLWIG 1996; ASHMORE and KNAPP 1999; ARSENAULT 2004B; SMITH & BLUNDELL 2004; ASHMORE & BLACKMORE 2008). The challenge it poses has to do with its underlying premises and also with conceptual differences among archaeologists about the uses of the landscape. At first glance, it raises question whether the word ‘landscape’ still retains its relevance in archaeological practice. Some have argued that the word ‘landscape’ has more-or-less become a “frosting” as a result of inappropriate borrowing of a singular well-developed idea from other disciplines (ANSCHUETZ et al., 2001; PREUCCEL & HODDER 1996:32).

Today, many researchers see the ambiguity of the concept as rewarding. It is not only beneficial as a thread that bridges and binds together social sciences disciplines, including geography, cultural anthropology and archaeology (ANSCHUETZ et al., 2001), but also as a tool that to explain humanity’s past through its ability to facilitate the recognition and evaluation of the dynamics and the interdependent relationships that people maintained with the physical, social, and cultural dimensions of their environments across space and over time (Ibid 2001:159).

A landscape paradigm is therefore relevant in archaeological inquiry in light of its potential to contribute toward understanding several fundamental problems confronting archaeology today, notably, the need to shift from the investigation of single sites to the study of questions addressing regional change and variation (e.g., BINFORD 1982, 1983; DEETZ 1990). Such

views stress that the landscape contexts in which prehistoric societies lived was a meaningful network that combined both the social, cultural, economic, ritual, and cosmological milieu that they were integrated with natural phenomena. The rock art sites investigated here are fixed in their original physical contexts and these contexts are undeniably vital to enable us to comprehend how people experienced that landscape.

4.7.1.Landscape Definitions

Landscape is one of the complex terms used in various contexts across disciplines, from art, geography and ecology to geology, anthropology and archaeology. Definitions of the landscape unequivocally include an area of land containing a mosaic of elements, including mountains, hills and water bodies like rivers, streams, lakes, seas, living elements such as vegetation, as well as man-made elements comprising of different forms of land use². All these elements represent both spatial and non-spatial patterns of landscape that defines the heterogeneity of the area (TURNER et al., 2001). Given that the landscape functioned as the primary context for human behaviours, it is one of critical area in archaeology to provide morphological and palaeoenvironmental data to reconstruct environmental conditions for prehistoric communities. Oxford Companion to Archaeology defined landscape archaeology in the following terms:

“Landscape Archaeology to be concerned with both the conscious and unconscious shaping of the land: with the processes or organizing space or altering the land for a particular purpose, be it religious, economic, social, political, cultural, or symbolic; with the unintended consequences of land use and alteration; with the role and symbolic content of landscape in its various contexts and its role in the construction of myth and history; and with the enactment and shaping of human behaviour within the landscape”.

Indeed, definition emphasizes the relationships between material cultures, people, and the cultural modifications of spaces. Furthermore, the fundamental concepts of landscape in archaeology include the space and place that characterizes human relationship with the total environment (TUAN 1974:4-7). Space is in the physical realm it comprises the environment, the ecology, the topography, and the physiography of geographical locations. According to Ouzman, spaces are “fairly undifferentiated areas which nevertheless provide the general character, texture, and context of a place” (OUZMAN 1998:34). Place defines the specific locations of human activity and infuses these locations with human meaning and action as

²The New Oxford American Dictionary

(TUAN 1974:136; TILLEY 1994:14). Space consequently defines the physical realm, place attributes human significance to these locations. David and Thomas described landscape archaeology as:

“An archaeology of place, not just as defined in a set of physical nodes in space (cf. BINFORD 1982) but in all its lived dimensions: experiential, social, ontological, epistemological, emotional, as place and emplacement concerns social identity, as much as they concern the economic and environmental aspects of life”, (DAVID & THOMAS 2008:38).”

In the same context, BARKER at al., (1995) view “Landscape Archaeology” as an archaeological study of the man-environment relations in prehistoric times and of the man-man relationships in the context of the environment. Tim Ingold said similar words and defined the landscape as “the world as it is known to those who dwell therein, who inhabit its places and journey along the paths connecting them” (INGOLD 1993:156). Paul Taçon defined the landscape as a function of the human mind, one that involved individual thoughts, choices, and the experience to map or construct modes of reality (TAÇON 2002:122). The mental construct of landscape combines not only visual input (what archaeologists typically privilege), but also the auditory, kinaesthetic, olfactory, and gustatory cues (OUZMAN 1998; TILLEY 1994). Individual perceptions and conceptions, therefore, determine “which elements, places, and spaces are included in particular landscapes” (TAÇON 2002:122). The processes of social participation, such as ritual and ceremonial events, also contribute to the cognitive construction of landscapes (RAINBIRD 2002:101). Landscape therefore produces a ‘*topophilia*’, or a place of attachments, where bonding occurs between individuals or where there is a collective attachment to a meaningful environments environment (TUAN 1974).

4.7.2.Rock Art and Contexts

The above definitions reflect the shift of landscape from being a mere natural phenomenon to being regarded as culture whereby natural features are cultural features embedded with meanings. Ian Hodder emphasized the significance of the context of prehistoric rock art. Context is “the totality of the relevant environment” (HODDER 2000[1992]: 88) in which human activity occurs.

Just as anthropologists’ uses ethnographic data to understand living peoples and societies, archaeologists use the “locations of rock art sites, their associated artefacts, and the nature of the iconography itself” to approach the social roles of prehistoric rock art in the absence of

ethnographic data (WHITLEY 2008:559). In particular, the landscape in which rock art sites exist provides a lasting component of its prehistoric context as they continue to exist in the same locations, thereby maintaining a “unique link with the prehistoric landscape”(BRADLEY 1991:80).

These locations therefore are significant as an interpretative element (CHIPPINDALE & NASH 2004; LAYTON 2001; YOUNG 1982; MANDT 1972, 1978). Archaeologists can, therefore, best study rock figures fixed in landscape through the lens of landscape archaeology (COMSTOCK 2002). Landscapes are fields of meaning comprised by sensorial stimuli, topographical features, and beliefs, with “subtle links between them” (OUZMAN 1998:38).

To understand the context in which rock art was made, used and distributed in the landscape, it is also necessary to consider the daily routines of prehistoric communities since the rock art producers were responsible in defining their foraging territories in the landscape that they exploited (NASH 2000; ZENDENO 2008). They identified significant landscape features, which served as signposts in the landscape (NASH 2000) and also marked their paths, rivers, and resources to claim ownership or ancestral affiliations over specific areas; they even to impose limits on movement through a landscape or on access to a specific area (BRADLEY 2002). Building on the above, I therefore focus not only on the context of the artworks, including their content, traits, culture, ethnographical parallels and any other association relative to its their meaning, but also evaluate “properties of space within which a visual image occurs” (CONKEY 1982:119). I look at the micro landscape, “the spatial dimension which determine a rock art site”, as well as the wider terrain of the macro landscape of the rock art such as their sites, locations, their distribution, accessibility, mobility patterns and resource procurement, proximity of natural resources such as water sources, shelters and distribution of game (CHIPPINDALE & NASH 2004:21-22; CONKEY1982: 119).

The landscape model, therefore, reflects the context of the rock art figures in relation to its wider landscape as illustrated in (Fig. 4.20). At the macro-landscape/ topographical level, the model looks at rock art locations in relation their wider landscape such as its associated mountains and rivers. In this case, looking at the general landscape variables that led to the distribution and concentration of both rock painting and engraving sites, includes site placement, aspect/orientation, elevation, proximity to water sources, visibility, and

accessibility of the rock art sites. Such macro-topographical elements do not only dictate to archaeologists how to record the site, measure and count figures and analyse the results but the sites will also say: 'hike here', 'climb there', 'stop here' 'stand there', 'look here'. The micro-landscape or the rock surface can be studied as an element invested with meaning, interlinked with the figures of rock art (LEWIS WILLIAMS & DOWSON 1990).

For this, I attempt to view rock art and topography in an intertwined landscape. The rock, the rock art and the landscape are all linked. Each case of rock art, therefore, indicates the selection of a specific location to be used in a particular way (BRADLEY 2000:79).

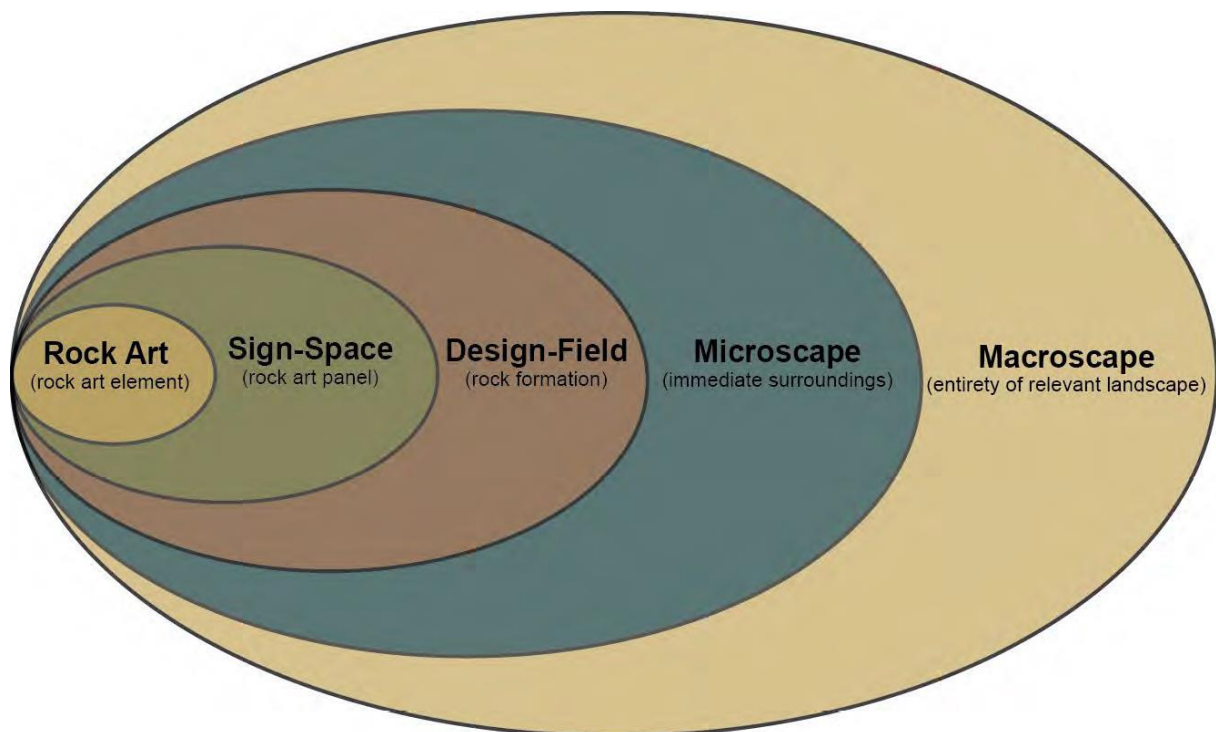


Figure 4.20 The context of rock art from a landscape archaeology approach, adapted from (NASH 2002; CONKEY 1982)



Figure 4.21 Illustration from site OWF60a. Rock art elements and rock art sign-space (top left), rock art design-field/rock formation (top right), and rock art microscape, which shows the view from the rock art (bottom). These images demonstrate the landscape archaeology concept that a rock art site not only encompasses the element or panel, but the site also includes the entirety of the relevant context, such as visual features as expressed in Fig. 4.20.

5.RESEARCH METHODS

Chapter five records the research methods employed in the systematic collections and analysis of the data. The methodologies developed were guided by the research objectives, namely, rock art, their state of conservation, the contextualization rock art in relation to landscape, the establishment of the origin of the pigment used in the production of rock art from selected sites and those recovered in the archaeological excavation of the rock art site of Leopard Cave, this in order to establish the chronological framework for this rock art. These were achieved through four field campaigns, carried out between June and July 2014, March-April 2015, September 2015 and November 2016 in Omandumba East and West farms, Erongo Mountains.

The research methodologies involved both informed and formal methods of data collection. Formal methods comprised of (1) an intensive and systematic survey and documentation of the rock art sites; (2) the creation of digital records and a records database; (3) the collection of pigments from suitable rock painting sites for laboratory analyses (4) the archaeological excavation of Leopard Cave in order to contextualize the rock art chronologically (5) the use of Geographical Information Systems (GIS) for landscape contextualization. Informed method included interviewing two local Ju/'Hoansi San men from the San Living Museum about their traditional knowledge of tracking and the identification of animal spoor in the rock-engraving site.

5.1.Formal and informed methods in rock art research

Rock art research involves two primary methods of analysis, namely, formal and informed methods (CHIPPINDALE & TAÇON 1998:6; CHIPPINDALE 2001; CHIPPINDALE & NASH 2004:14; WHITLEY 2005:6). Informed methods also referred to qualitative methods, and these draw mainly from the “insight passed directly or indirectly from those who made or used the rock art” (TAÇON & CHIPPINDALE 1998:6). In this case, it was the ethnographic or ethno-historic insights into rock art through the interpretation of individual rock art elements or sites. Formal methods used quantitative or locational data to interpret the rock art. This is an outsider’s tool and it is independent of the insider “the information available is then

restricted to that which is immanent in the figures themselves or which can be discerned from their relation to each other, landscape or by relation to whatever archaeological context is available” (CHIPPINDALE & NASH 2004:14). Both methods fall squarely in the realm of a contextual approach to the study of rock art and where empirical and inferred enquiries are applied to provide explanations for the observed phenomena. Rock art researchers can therefore use these contextual methods independently or concurrently in the collection and analysis of the rock art.

The informed methods rely on ethnographic or ethno-historic data obtained from the traditional knowledge of the contemporary cultures or the descendants of those people who are thought to have produced the rock art (an example would be the San communities in Southern Africa). Through the use of these insider stories, aims at interpreting figures as an insider. This is referred to as *emic* perspective (CHIPPINDALE & NASH 2004:14). Emic enquiries consequently include information about the significance of rock art sites to the descendant groups and the interpretive analogies regarding the symbolic depictions expressed in individual rock art element, and also the area it was placed on the rock surface and in the entire landscape. However, informed methods do not only rely on inside knowledge, but also upon the general observation of the landscape in which the sites are found. Such information functions as a descriptive analysis and is not attestable in a scientific sense (MEIGHAN 1981:83). The goal is to reveal the significance of the contextual relationships between the juxtaposed figures and between the sites in the landscape, while keeping in mind that the ethnographic information, might have been far removed from the original context of that art.

For this thesis, informed method of ethnographic inquiry was employed in terms of the assistance provided by two local members of the Ju/'Hoansi San community from the San Living Museum in Omandumba West Farm. Their contribution was fundamental in the identification of the engraved depictions of animal spoor/tracks in relation to the fresh animal tracks found in the same site. Such analogies are presented in Chapter 6 as an example of a qualitative approach in rock art research. Since the formal methods are quantitative in nature, they are independent of the insider's perspective. They are referred to as *etic* perspective (CHIPPINDALE & NASH 2004:14). Etic (or outside the dataset) focuses on providing information about rock art that is important to scientific researchers. Etic data begins with empirical observation such as the morphology of the rock art, information about the immediate context of the rock art, the distribution of rock art by means of GIS, aspects of

the rock art environment, the origin of the raw materials used in the production of rock art and the attempt to discover patterns of associations (if any) within the data. Patterns identified using formal methods may not necessarily reflect the relationships that would have been important to the creators and users of the rock art, but they enhance our understanding of the significance of rock art within larger contexts.

5.2.Methodologies and data collection

The general research objectives included broadening the existing archaeological knowledge about the Erongo Mountains in order to establish a chronological context of these mountains and that of rock art. The following three sections details research methods and the data collection procedures used in the research for this thesis. Section A details the project design. Section B outlines the fieldwork procedures while Section C gives an account of the analysis techniques.

5.2.1.Section A: research preparation

a. Identifying the Omandumba Farms as Research Areas

The northwestern area of the Central Namib Desert is geographically known to have the greatest concentration of rock art sites in Namibia, notably with areas such as Brandberg, the Spitzkoppe, Twyfelfontein and its adjacent areas. This is thanks to the pioneering rock art research into these sites. As a result, these sites have been proclaimed as National Heritage Sites and currently enjoying the legal protection under the National Heritage Act No. 27 of 2004. With the proclamations of Twyfelfontein as Namibia first UNESCO World Heritage site in 2007, tourism activities in this part of Namibia increased exponentially, as tourism statistics from the National Heritage Council reveals. The activities spread rapidly into other rock art sites in Namibia and sites in Erongo Mountains were no exception to such trend. The only difference is that, very little is known regarding the existing rock art sites in this complex and their current state of conservation including those proclaimed as National Heritage Sites such as Phillip Cave in the Ameib Farm and Paula's Cave in Okapekaha Farm in Erongo Mountains.

Through my work as a rock art archaeologist at the National Heritage Council, it was therefore, of utmost importance to carry out rock art research in Namibia. Barely a year in the

office, I had carried out an extensive Condition Assessment of the rock art sites in Central Namibia, beginning with those that have been proclaimed as National Heritage Sites, moving on to those that have not yet been proclaimed as such, but which are receiving a high influx of tourists, especially in the Erongo Mountains. The Condition Assessment Index indicates the higher vulnerability rate of the rock art sites in Omandumba Farms just like other sites in Erongo because of high number of tourism activities on the farms.

Since Erongo has received less scientific study of the rock art sites unlike Brandberg, Spitzkoppe Mountains and Twyfelfontein site, my initial goal was then to establish whether the spatial distribution of Omandumba rock art had a density comparable to that of other well-researched sites. The magnitude and the scale of Omandumba sites led me to rather systematically document these sites in order complement the on-going archaeological investigation of Omandumba sites by the French investigators from the Muséum National d'Histoire Naturelle. It is therefore hoped that this study will get the areas proclaimed as per National Heritage Act no 27. Of 2004 and subsequently develop both conservation and management plans.

b. Timescale and Personnel

The initial 2012 Condition Assessment Survey and studies indicated that there were 40 rock art sites in both Omandumba farms (NANKELA 2002; BÖRNER 2013). In order to determine the appropriate timeframe for the project, I had considered a number of aspects, including the geographical areas to be covered, the number of sites, the nature of the access to the area in terms of the topography of the sites (and permission from the farms owners since the sites falls under private land), the climate and the seasons, and the key personnel that would be needed to carry out the project. For this, it was important to form collaboration with a number of key institutions and personnel in Namibia namely: the University of Namibia, the National Museum of Namibia, the National Heritage Council, the Geological Survey of Namibia and the Ministry of Lands and Resettlement of Namibia in addition to international institution specifically the Museum National d'Histoire Naturelle. The National Heritage Council was instrumental in providing logistics services for the projects, namely, the Heritage Research Permits, fieldwork vehicles, drivers, camping equipment and all primary rock art recording equipment. The National Museum of Namibia provided us with a technical assistance of Mrs. Fousy Shinana-Kambombo who is a professional photographer and archaeology field technician. Two University of Namibia students Maria Mwatondange and Tuuda Haitula from

the archaeology unit also participated in the survey and documentation of the rock art sites, as well as in the archaeological excavations of Leopard Cave in 2014 and 2015.

At the same time, I have also been supported by two local Ju/'Hoansi San men Mr. Kxao /Lukxao, an 80-year-old San man and Mr. N!ani R!kxao, a 45 year-old San man, both originally from Tsumkwe but currently dwells and works as guides at the San Living Museum in Omandumba West Farm for some times now. They were instrumental in locating a number of rock art sites, as well as identifying animal tracks/spoors and some depictions of animal figures within rock art. As mentioned before, the research was also carried out in collaboration with the international research team from the Museum National d'Histoire Naturelle de Paris, namely, with the principal investigator Dr. David Pleurdeau and his colleagues Dr. Florent Detroit, a paleoanthropologist and Dr. Matthieu Lebon, a pigment specialist as well as Guilhem Mauran – a doctorate student as well as Océane Lapauze, master student who studied the pigment materials from collected at Leopard Cave and other Erongo sites. It was this multidisciplinary team that carried out the archaeological excavations at Leopard Cave. They have been doing their scientific investigation of the rock art site of Leopard Cave from 2008 sporadically to date. Their research objective included the broadening of the archaeological knowledge of Erongo in order to establish a chronological context for the Erongo Mountains.

These periods were significant in order to investigate and observe how the landscape and climate had changed in the study areas. For instance, in Namibia, the period between June and July is considered winter season, March and April is the rainy season while September to November is the summer season (Fig. 5.1 & Fig. 5.2). During these periods, I then investigated the comportment of the natural environment in terms of available water sources such as springs, pools, ponds and rivers, the time when animals make use of these water points in both seasons, the presence and absence of various faunal species found in the environment today in relation to those depicted in rock art, vegetation covers especially near the painted and engraved sites, accessibility and visibility of rock art sites, sites popularly visited by the tourists, the behaviours and number of tourists at the sites as well as tourism in the peak and off-peak seasons.

It was also during these periods that I had observed how the local San people from the LM guide tourists, observed both social and economic activities of the Living Museum and how

they are interacting with the environment today. I had various discussions with them with regards to the nature of their job, how they came to Omandumba and how they understand rock art heritage in Omandumba and generally in Namibia. Data obtained from these discussions are not necessarily discussed in details in this thesis but were collected for heritage education planning of rock art sites for the National Heritage Council of Namibia.



Figure 5.1 Fackelträger Shelter in Omandumba West Farm immediately after rainy season in April 2014



Figure 5.2 Fackelträger Shelter in Omandumba West Farm during summer season in September 2015. Two contrasting images of vegetation cover taken in different seasons from the same angle of the Fackelträger Shelter in Omandumba West Farm. They demonstrate the changes in the landscape immediately after rainy season in April 2014 and summer season in September 2015.

c. Accessing research areas

Having already established a relationship with the Omandumba Farms owners, during the assessment of the conditions of the rock art sites in November of 2012, I was able to obtain permission to carry out rock art research on the farms. Throughout all the field campaigns in the last five years, Mr. Harald Rust and his family (Fig. 5.3) supported us enormously and made our stay very comfortable. They provided us with free accommodation at their campsites. When we ran out of drinking and washing water, they provided us. When wood for cooking was hard to find, they provided it for us. Since there is no electricity in this part of Namibia, the Rust family were also kind enough to allow us to charge our camera batteries in their house. The family was also instrumental in assisting us to locate most of the rock art sites. Their generosity and support throughout the project is truly immeasurable.



Figure 5.3 The Rust's Family. Records Search. The above image shows the Rust family. To the right are the Rust children assisting in locating some of the rock art sites, while at the bottom is Mr. Harald Rust also showing us some of the rock art sites in the Omandumba East and West farms. Photo credits: Harald Rust, FousyShinana-Kambombo, and the author.

The initial research strategy was designed and devoted to specifically understand the rock art sites of Omandumba farms in order to place them within the context of other rock art sites in the Central Namib Desert and within the chronology of the Erongo cultural landscape. To do this, it was imperative to systematically review the published archaeological research on rock art in the Erongo Mountains, especially in the Omandumba farms, and methodologies used in the documentations of these sites by earlier researchers (BREUIL 1957, 1960; SCHERZ 1986; BÖRNER 2013). After accessing the available literatures and the Heritage Database of the National Heritage Council of Namibia, I combined the data and in order to establish which sites were previously studied, and those that had been missed out on and also to chronologically contextualize all of them. Given the insufficient information on the sites which had previously been studied, especially in the Omandumba farms, the goal was to carry out a complete systematic survey and recording of all the rock art sites, including those that have been previously studied, those known about but which had never been recorded, and new sites.

d. Standardized survey and recoding forms

Rock sites presented in this study were documented following a standard field methods developed and used at the Archaeology Department of the National Heritage Council of Namibia (NHC). The standardization of field practice is vital in ensuring that the rock art sites, their content and setting, are documented in accordance with the norms of the internal database of the National Heritage Register of the NHC and in such a way that it will allow for the common storage and retrieval of data from sites that are found in the same region, this in order to ensure that data can be compared to sites from other regions in Namibia. The existing standardized form was amended to integrate the current research frameworks of the thesis (see Appendix 1).

The standardized rock art recording form comprised of three sections. The first segment is administration in nature and includes information such as the project name, the region, the site owner, the site name, GPS locations, altitude and maps used. Section A of the form addresses the landscape context of the rock art area in terms of geology, geomorphology, ecology, climate, and the nature of accessibility (private or public land). The second section is more site specific, providing detailed information about the context of the individual site in terms of the site name (local name), the established panel number, GPS locations, site elevations, the rock formation type, type of surface (vertical, horizontal or sloped), its

orientation, its dimensions, some brief observations about its location in the landscape (i.e., spatial distribution, vegetation cover, as well as descriptive content of the site in terms of the number art figures, superimposition, themes, past documentation history, its current state of conservation and the site's associated archaeology). The third section in the recording form consist of the photography form where all individual images of each sites were recorded and numbered in accordance with the site number and the established panel ID

e. Equipment Recruiters

The equipment used (Fig. 5.4) in both the survey, documentation of the rock art sites and the archaeological excavations during the field campaigns comprised of vehicles and camping equipment. The recording equipment included maps (a topographical 1:40 000 map and geological map of 1:50 000 scale from the Ministry of Land, as well the Geological Surveys of Namibia), three Garmin handheld GPS, two digital cameras (Cannon EOS D3100) and their tripods, a reflector, a black blanket for photography, measuring tapes of various measuring meters, notebooks, pencils and pens (from the National Heritage Council), IFRAO scales that I'd acquired from ITM rock art laboratory in Macao, Portugal, survey and recording forms and other paperwork's.





Figure 5.4 Various equipment recruited used in the systematic documentation of rock art in the study.

f. Before the commencement of the field campaigns

Before fieldwork was started, we host numerous meetings with all the participants in the fieldwork, i.e. the archaeology students from the University of Namibia, field technician from the National Museum of Namibia, as well as the excavation team, to discuss details of the fieldwork plan and procedures, and to provide guidance for the research team, i.e., using the new rock art survey and recording forms, maps, excavation procedures, the used of the field equipment, some lectures with information on to rock art research in Namibia, as well as briefings on health-related aspects and emergencies. We also had the students' consent letters from their parents giving permission for their participation in the field.

5.2.2. Section B: data collection

a. Mapping

Field investigations began by locating the previously recorded and unrecorded sites (BREUIL 1961; SCHERZ 1986 *cf.* RICHTER 1991; NANKELA 2012; BORNER 2013 and NHC DATABASE) in the Omandumba West and East farms. Since some of the GPS locations of these sites were known, they were plotted on a topographic map of the Omandumba West Farm (Fig. 5.5) that was then used.

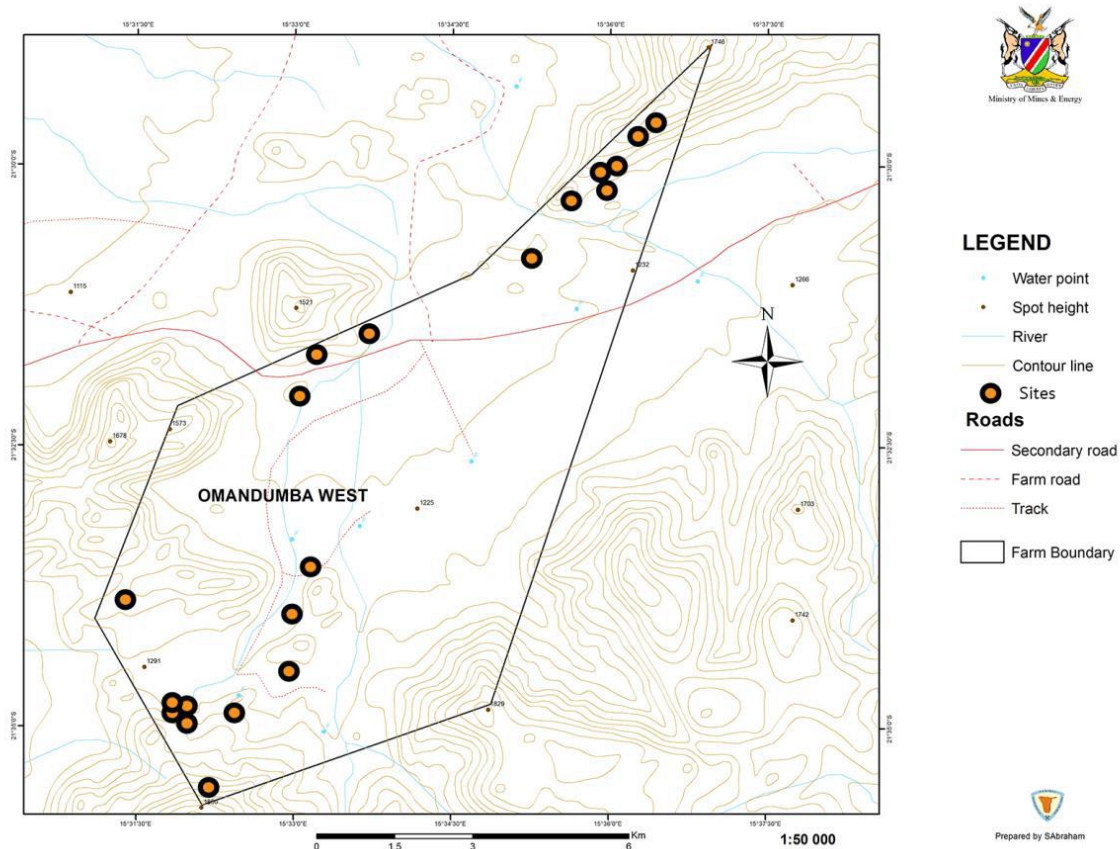


Figure 5.5 A Topographical Map of known locations of rock art sites (in orange) prior to the systematic survey in OWF and OEF farm. Map credits: the Geological Survey of Namibia.

b. Field Transect

Once we verified the existence of these sites, we proceeded to record the sites in the rock art survey form. Immediately after that, we selected two sites as candidates to test out our new survey and recording forms (Appendix 1). Each site contained less than a dozen rock art elements, a number I felt we could handle for testing the new forms in a reasonable time frame. We then made a day trip to the farm to make a final assessment of how many sites we could inventory in one week's time given the detailed survey and recording form. After that, we began a systematic survey of other rock art within the boundaries of the Omandumba farms, which meant inspecting almost every outcrop, hill, kopje, riverbeds and isolated boulder within the farms. Occasionally, our team consisted of three to five members.

The surveys, both in winter and in summer, were quite difficult because of the extreme temperatures, walking in rugged terrains and the dense vegetation with some dangerous wildlife. I drove as close as possible to the rock art sites. From where I parked, we had to hike

anywhere from a few meters to 2 kilometers to reach the rock art sites (Fig. 5.6). The survey lasted for the entire duration of the first field campaign between June and July 2014. The GPS data were uploaded into a private Google Maps and QGIS to provide a broad view of site locations and the possible associations, this in order to study the spatial distribution of the sites in the landscape and the site contexts.



Figure 5.6 Hiking towards the engraving site within local San men from the SLM.

While hiking to the rock art sites, we paid attention to the landscape, taking notes and photographs along the way. We did this in order to become familiar with the study areas throughout the field campaigns. We paid particularly close attention to the water sources. The availability of water in this semi-arid environment is intermittent and often unpredictable, and an understanding of this must have been important to the rock art artists. We noted the locations of the contemporary animal trails, springs, pools and river tributaries, and their distances from the rock art sites. We had already taken note of the types of wildlife in the study areas and in the Erongo Mountains in general. We always dialogued with the local San men, who on several occasions assisted us in locating the sites. Throughout the hiking trips to the sites, we often talked about topics such as their knowledge about the tracking of animals, how to navigate the entire landscape, where to find in the territory resources such as water and wild fruits, how act when one encountered a snake or a dangerous animal such as rhino or leopards, which are quite common in this territory. Such conversations were enriching and I become comfortable and familiar with the landscape.

In addition to the above, it was also during this period that we established the nature of the access to the sites and their visibility in the landscape. Most of the sites were accessible without difficulty as most of them were located at the foot of slopes with imposing features. Others proved more difficult to access, often requiring us to crawl on smooth granites to reach them. Very few of the rock art sites whose panels are about sixty meters long are visible from a great distance. Others consisted of a small, single figure, and could not really be seen until one was standing directly in front of the rock face. Other artwork was so lightly scratched onto the rock surfaces that it was only visible at certain times of day. This variability in the visibility of the sites reflects one aspect of its accessibility.

Some sites were so hidden that they require a good deal of searching, even if when one had been to them before. When we finally arrived at a site, I familiarized myself with the site, its settings, its view, its immediate vicinity, as well as its proximity to every landscape feature and surface artefacts. I often walked around, looking at the figures from every angle of the rock surfaces, establishing the best position for photography or movement around the site. We also tried to determine if the way we had approached the site was the only way, or if there are other ways of arriving at the site. After we spent some time exploring the area, we started to record the site. We began by marking its location in the GPS and then register it in the survey and recording forms. We then recorded the site photographically, capturing the site from various perspectives and distances, but also the surrounding area, and the views from the site. We always photographed the view looking out from the site, to help remember the site's location in the landscape. After that, we prepared and set up the recording equipment (black blanket for shade, reflector, cameras, survey/recording forms) and spent approximately an hour filling out the site survey and recording forms.

Most of the time, it was challenge to photograph both paintings and engravings during the day because of the intense glare of the sun exposure, even though we had the equipment. For that reason, it was either early in the morning or late afternoons that we located and recorded the sites. Sometimes the situations would not allow for the return to some sites, this was the case especially with sites known to be habited consecutively by rhinoceros and leopards. So, we eventually just recorded the sites during prospections. Beyond this, the only other difficulties we faced involved cuts and bruises, the extreme heat combined with the physical exhaustion from hiking. We often ran for shade under a tree or rock shelters and refilled our water bottles before we hiked back to the place where the car was parked. There were two serious

incidences encountered during the April 2015 and November 2016 field campaigns. One was the encounter with a black mamba at the rock-engraving site in 2015, fortunately, no one was injured and we ultimately abandoned the site that season. The second incidence occurred when one of our French colleagues Guilhem Mauran³ was utterly attacked by a rhino, fortunately, the rhino was dehorned and no physical injuries were experienced.



Figure 5.7 Above image shows researchers hiking to rock painting sites in Omandumba farms with Rust's Children while bottom image shows researcher locating rock engraving panels with San people.

³Doctorant, Ingénieur ESPCI Paris, Musée de l'Homme, HNHP - Histoire Naturelle de l'Homme Préhistorique (UMR 7194)

Once we had established the number of rock art sites and organized the surveyed data obtained from the first fieldwork, the subsequent goal was to record all the sites using the rock art recording and photometry forms. We were guided by the research objectives while following the model for recording techniques by Hipolito Collado (COLLADO 2006: 116-117 *cf.* COLLADO 2014:142-143). Each site form included the following information.

- Landscape variable of the sites: vegetation, proximity to water sources and trails, nature of access, location, orientation, visibility and elevation.
- Site attributes: Number of panels present, GPS location, site type and proximity to its neighbouring sites.
- Panel attributes: Panel ID, dimensions, orientation and surface, state of conservation, number of clusters, number of figures and typology of elements.
 - Technical data: technique of rock art figures, indication of superimpositions/overlapping.
 - Surface archaeological collections: general observations about the surface archaeological artefacts present at the site/panel. All these activities are indicated in (Fig. 5.8).

Rock art stations: Omandumba West Farm (OWF) and Omandumba East Farm (OEF). Each study area holds its own different number of rock-art references. For instance, OWF contains only rock painting sites, referenced from 01 to 56 (OWF01-OWF56). Such reference numbers indicate the number of rock painting sites that were recorded within this particular farm. OEF included two reference stations, namely, OEF57-OEF60 representing the number of rock painting sites found within that farm as well as site OEF61, OEF6101-OEF50 which reflects the number of rock engraving panels recorded within the same farm.

It is possible that a rock-painting site could contain two or more panels. In most cases, they would have different aspects such as orientation, visibility in the landscape, accessibility, geomorphology (shelter, cave etc.), degree of exposure to anthropic, biological and natural factors, quantity of artworks, or clusters of artworks. In such case, the panel would be assigned a Panel ID. There are panels with local names while others do not have such names. In both cases, they were designated panel numbers. Thus each panel would bear the site number and its attributes Panel ID. For example site OWF04a represented Omandumba West Farm, Site 04, Panel (a). In case of the engraving site, since the site was classified as OEF61, its panels were already defined by their numbers, i.e., OEF61-01, if a panel contained two aspects, I used clusters to distinguish them for instance OEF6101 cluster 1 which translated to

OEF6101CL1. In light of the boundary of the farms, I acknowledge that both sites shared the same geographical location and cultural landscape. Their spatial distributions were defined as one cultural landscape in this area although references would be different since they were found in two farms.



Figure 5.8 Processes involved in the recording of rock art. On the top left are the landscape variables and site attributes and the nature of access to the panel. Bottom images show the recording of the panel attributes, clusters of figures, individual figures and the panel's surface archaeological collections. Illustrations from: Site Name: OWF53, Local Name: Bees Swarm, Panel Number: OWF53b.

c. Photography Documentation

Photography in rock art research is one of the primary means of recording rock art (Fig. 5.8). Unlike other archaeological artefacts, rock art cannot be excavated, labelled, bagged and transported back to the laboratory for analysis. In this sense, photographs function as artificial maps as they provide a single fixed perspective of an item of rock art in its landscape – a perspective, which was consciously chosen by the photographer. Like maps, the photographs taken during this study have several important uses. Firstly, they provide a partial record of the rock art and its visual context.

The use of a Cannon EOS D3100 digital camera permitted the rapid and accurate recording of a large number of images from various perspectives and angles. Following recommendations of David Whitley (WHITLEY 2011), close-up shots of individual rock art elements with/without the standard IFRAO colour card and damage were taken, as well as context shots capturing the rock and its physical settings. Given the extreme glare of the sun in Namibia, the visibility of both paintings and engravings were greatly affected by light and different weather conditions, which made the act of locating and recording them quite challenging especially given the fact that all photographs were taken during day time only but at different times, which allowed for recording figures when they were most visible. No photographs were taken at night given the nature of the study area. It was simply not safe at night. Several panoramic shots of the panels and sites were taken with their surrounding landscape (Fig. 5.9).

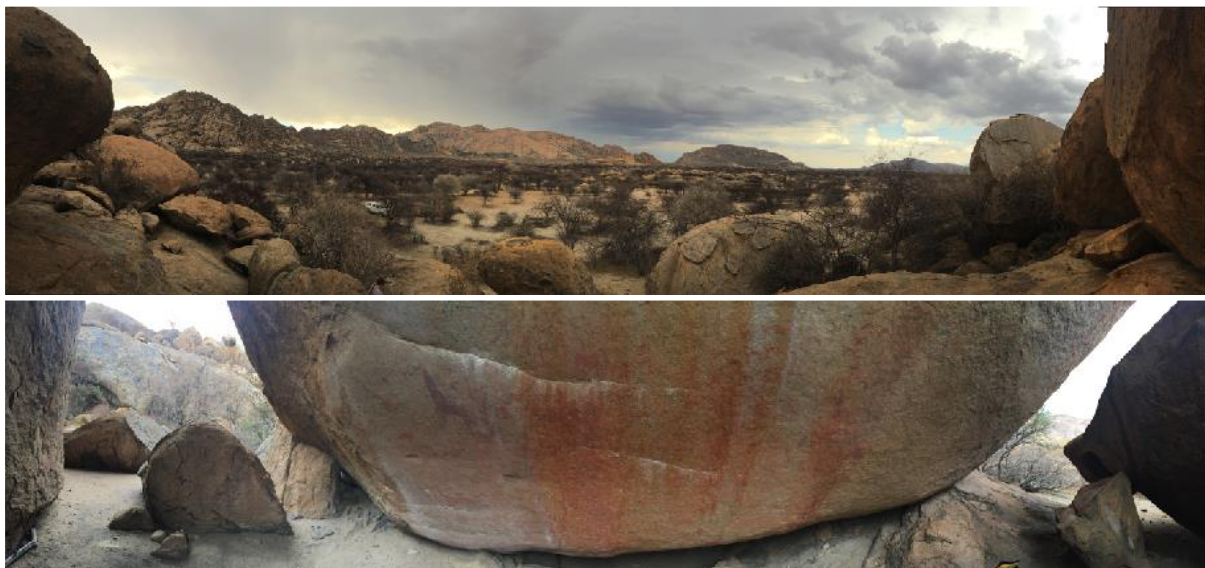


Figure 5.9 panoramic shots of the landscape features around site OWF39, also the Fackelträger shelter.

This was particularly important because some researchers believe that inter-visibility (seeing one place from another) between sites may have been important to prehistoric societies and may have influenced the location of sites. However, since most of the figures appear in clusters, there was no need to take a panoramic shot for each individual panel. In addition to panoramas the panoramic views, various images of the surrounding landscape of the sites were taken and stitched together to create the panorama. This was done using for instance Adobe Photoshop CS6 application. All the images were recorded in the Photography Recording Form used in the field as a guide, especially given the fact that photographs were taken during different visit to the sites. The photography form is included in Appendix 1.

d. Stereo photogrammetry also 3D

Stereo photogrammetry was another invaluable technique used in recording some of the rock art sites. The figures were used in creating three-dimensional models from two-dimensional photographs. Here, the topography of the rock, its surface texture, as well as the figures, was photographed to produce the 3D images. Dr. Florent Detroit was instrumental in doing the 3D imaging of the selected sites (Fig. 5.10). However, only some sites were photographed in 3D. This was attributed by a number of factors including the sun exposure, site settings and time.



Figure 5.10 Dr. Florent Detroit photographing one of the engraved panels for 3D imaging as shown on the right.

e. Contexts of Pigment collection and analysis

A number of pigment samples were extracted from three different contexts (Fig. 5.11) in the study. Firstly, there were those collected ochre stones collected from /Ga'aseb ravine of the Brandberg Mountain and Burnt Mountain south east of Twyfelfontein World Heritage Site. The collection of these pigments sources came as a result of unsuccessful attempts to potentially locate original sources of pigments (hematite and ochre stones), following surveys in Omandumba farms in 2014. The second contexts of the pigments samples were those

recovered from the cleared alteration walls of site OWF42/Leopard Cave walls (Fig. 5.12). The clearances of the excavation of square P7 in 2015 has also led to the discoverer of small areas at the lower section of the cave wall with concentration of pigments deposits similar to those found at the top of the upper limit of the sediment before the excavation. Pigments were then collected from this area for analysis.

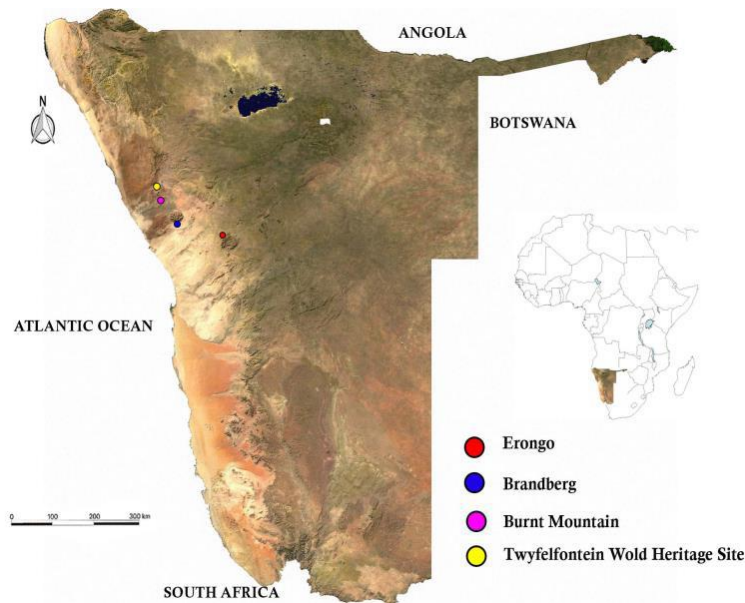


Figure 5.11 Locations of all rock art sites studied to identify the origin of the pigments the Erongo Mountains.

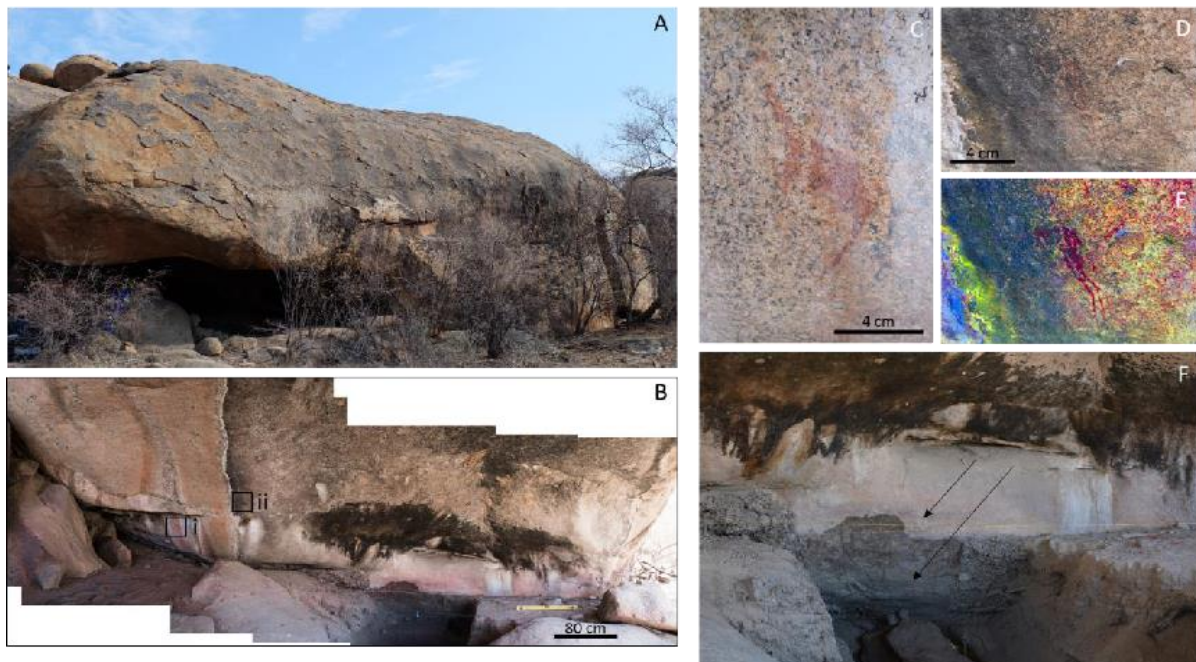


Figure 5.12 Leopard Cave/ site OWF42A: The general view of Leopard Cave. B, Panorama of the Western Wall © Mathieu Lebon. Rectangles locate the different area analysed: i correspond to the red giraffe (C), ii to the red animals covered by a black alteration layer (D and E). C: The red giraffe, D: The back-legs of a red animalistic representation largely covered by a black alteration phase. E: DStretch treatment of the previous picture improving the reading of the still visible parts. F: General view of the red flat tints discovered above and inside archaeological layers. The arrows point at the two different locations analysed, (After, Mauran 2016).

In addition to the pigment collected from cave wall, there were also significant archaeological materials recovered from the excavated square P7 and levels in the areas O7, O8 (Fig. 5.13) of the site were the significant concentration of crude stones stained with pigments (Fig. 14) and numerous artefacts related to their preparation (pestle and grinding stones - with traces of cupules of impacts. It is likely that these stained pigmented stones were used as modes of pigment preparation through compilation crushing and thereafter by a grinding.

As a result, such discovery made Leopard Cave the only site, within the entire region and Namibia in general to have *in situ* materials directly linked to not only the productions of rock paintings but whereby its materials are associated with the tools dedicated to the preparation of pigments found in Layer (P7) dated between 3200 and 3500 BP (PLEURDEAU et al., 2016). This site is therefore of paramount importance in the contextualisation of rock art in associations with archaeological evidences to enable us to better understand the distribution of these pigments, their possible links with the human occupations and correspondence between the composition of the surface pigments recovered from the cave walls as well as their mineralogical nature.

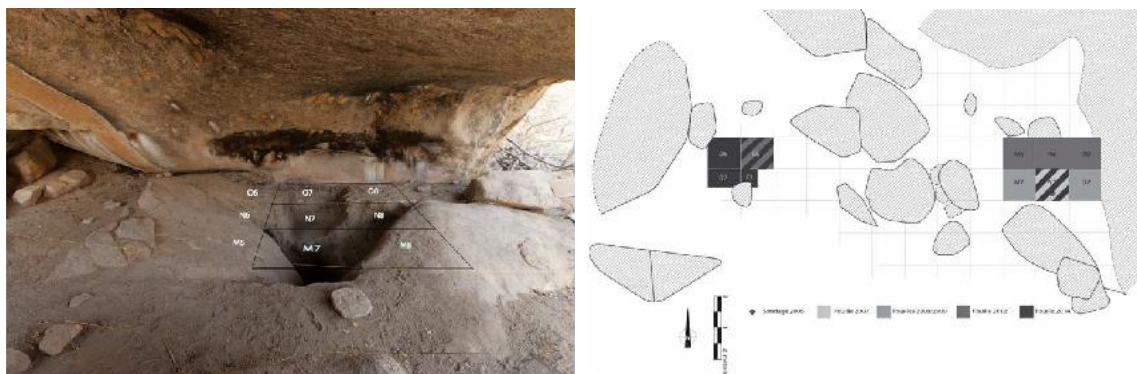


Figure 5.13 The site excavation areas and site successive plan of the excavations in the site since 2007, credits (PLEURDEAU 2016).



Figure 5.14 The pigmented materials (grinding stones and the pilon) from square P7, after (PLEURDEAU et al., 2015).

The third context deals with *in situ* XRF analyses of 8 rock-painting sites from Erongo Mountains. These includes four (5) sites from the Omandumba West Farm, namely:

OWF25/Blackman Shelter, OWF39b, OWF41, OWF42/Leopard Cave and OWF 56/Elephant Wall, as well as one (1) site from Omandumba East, site OEF60. All these sites lie between 1 to 12km of each other within the study. The figures are all painted in monochrome (red and black). Samples locations were recorded photographically. The other two sites are not from Omandumba farm; one of them, the “Rain Cloud” is from farm Ai Aiba just opposite Omandumba while Tubusis lies south west of Omandumba. The following (Table 5.1) sums up the different sites analysed and the reasons that lead us to study them. The sites are then localized in their local context among some of the known rock art sites, (Fig. 5.15). For the purpose of this thesis, only sites from our study areas will receive attention.

Table 5.1 Presents rock-painting sites analyzed in November 2016

Sites	Code	Site No	Reasons of interest
Leopard Cave	LC	OWF42	Archaeological
Fackelträger	Ftg	OWF39b	Archaeological, diversity of red hues
Black Gnu Wall	BGW	OWF2016	Black representation
Elephant Wall	EW	OWF56	Black representation
Black Man Shelter	BMS	OWF25	Black representation
Ghost Cave	GC	OEF60b	Diversity of colours, black representation
Rain Cloud	RC	ANIB1	Diversity of colours, diversity of red hues
Tubusis	Tbs	TBS1	Diversity of colours, black representation

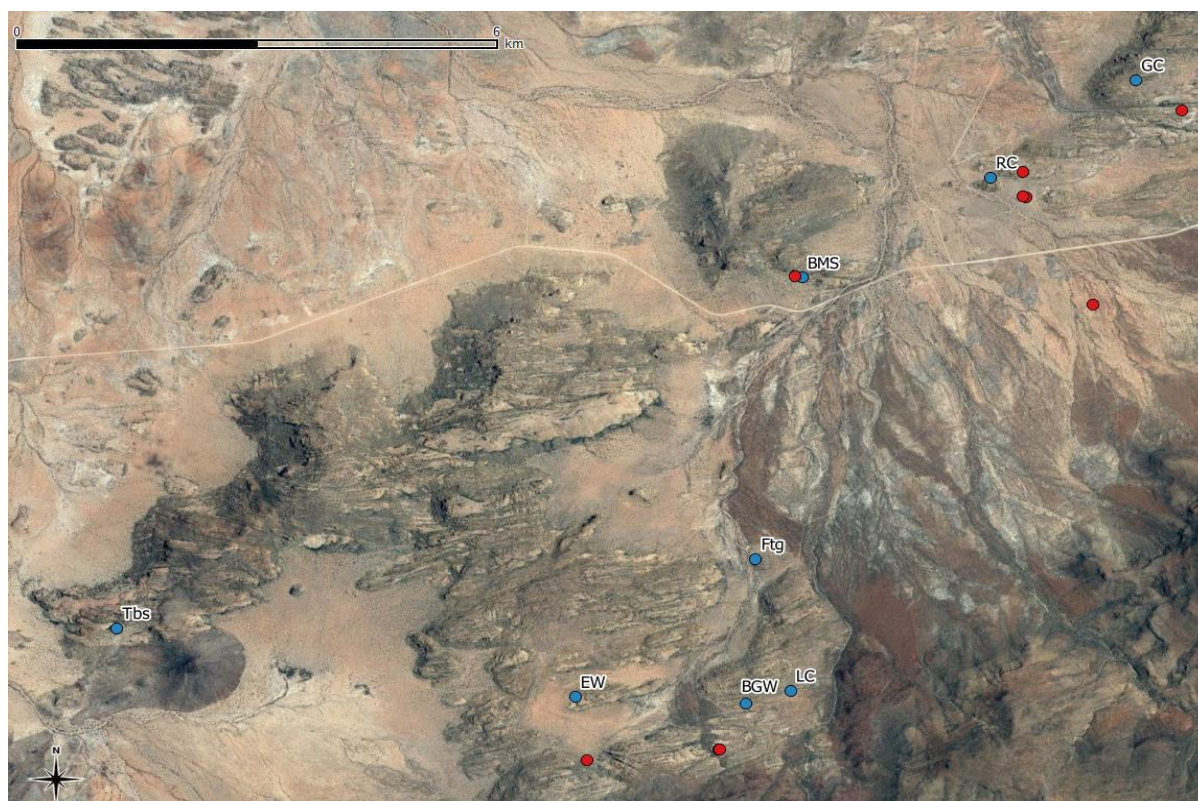
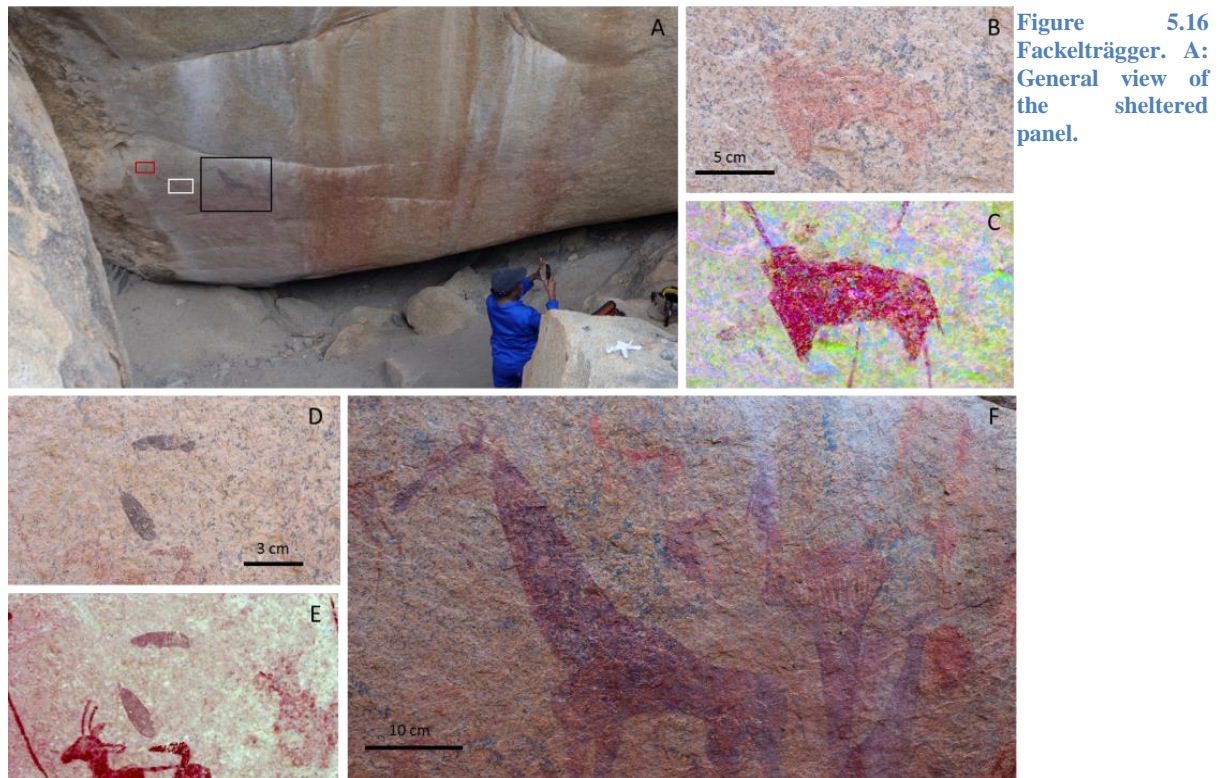


Figure 5.15 Local context of the rock art sites analysed in November 2016, (After, MAURAN 2016). The blue dots indicate the sites analysed with in situ XRF, the red ones stand for known rock art sites not analysed in November 2016.

At Fackelträger site (Fig. 5.16), the *in situ* analyses focused on three locations of three figures of panel: dark purple wings, insert D and E, a light red animal, and insert B and C, of a dark red giraffe, insert F D, B and d F as shown in the insert images of the same figure in location A. Here, all the figures are hues of red, going from light red to dark purple, (B, D and F). The study only focused on.



The different rectangles locate the three figures analysed: red: the black wings (5.D and E), white: the light red animal (B and C), and black: the red-purple giraffe (Fig.5 F). B: The light red figure. C: DStretch image of the previous photo easing the reading of the light red representation. D: The dark wings. E: DStretch image of the previous picture, no improvement could be achieved on the wings, but treatments improved the red figures. F: The red-purple giraffe

The Black Gnu Wall's site (BGW) was discovered near LC during field survey in November 2016 in Omandumba West, inside the corridor between the 3 Elephants Camp and Leopard Cave. The drought extensively affected the vegetation surrounding the site, allowing its discovery and analysis as shown in (Fig. 5.17). The presence of black figures led to the *in situ* analyses at that time. The two main figures of the site were analyses: a black gnu and a red feline, insert figures B and C.

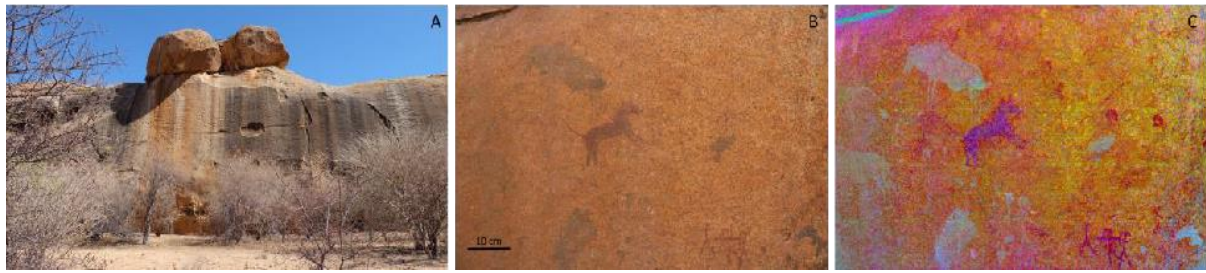


Figure 5.17 Context and environment of the Black Gnu Wall's site, In Figure 5.17, the panel hosting the paintings are located just to the vertical of the upper boulders. B: Colour enhanced picture of the panel with the two main figures of the site: the black gnu above the red feline. C: DStretch image of the previous photo revealing the presence of other black paintings (in white) and red figures (red/purple).

At Elephant Wall/site OWF56, the presence of black paintings (of the elands) was also of main interest as shown in the insert images B and C.



Figure 5.18 Elephant Wall /site OWF56.A: Context and environment of the site, the rectangle locates the panel analysed. B: The panel studied during the fieldwork 2016: the red elephant and the two black animals. C: DStretch image of the previous photo improving the reading of the black (in black) and red figures (red).The analysis at the Black Man Shelter (BMS) in Omandumba West near Anibib, also presents some paintings made of black and red pigments, unfortunately most of them cannot be analysed easily. Therefore, only the black man figure was analysed, insert B and C.



Figure 5.19 Black Man Shelter/site owf25. A: View of the site. The white rectangle locates the figure analysed. The other figures of the site are located on the ceiling; traces of them can be seen in the upper right corner of the picture. B: The panel studied during the fieldwork 2016: the black anthropomorphic figure. C: DStretch image of the previous photo improving the reading of the figure (black).

Ghost Cave (GC) is a shelter in Omandumba East. It hosts 2 panels next one to another, Figures 5.20 (B and E). One is composed of various red animals and black figures, insert B-D, the other one is made of several white paintings (ostriches and “ghosts”), numerous red animals (giraffes), some black anthropomorphic representations and some dark red anthropomorphic figures, insert 9.E-J. For both panels, the various paintings are covering

each other and suffered sundry alterations. The analyses carried out on the site focused on the nature of the diverse pigments used to realise the paintings of the site. On the first panel, the one having only red and black representations, three distinct figures were analysed: one black, only the upper head of a giraffe is clearly visible, insert C-D, and two different hues of red of two different animals: an elephant and a springbok. On the second panel, as the diversity of the colours used is more important, more analyses were carried out. In total, six figures were analysed: three whites – the ostrich and the two “ghosts”, insert G –, one black – an anthropomorphic with a bow, insert H – and two dark purple-red anthropomorphic figures, insert I-J. The large spread of white alteration over the red figures of this panel, made the analyses of the red paintings of fewer interest than those of the previous panel, insert E.

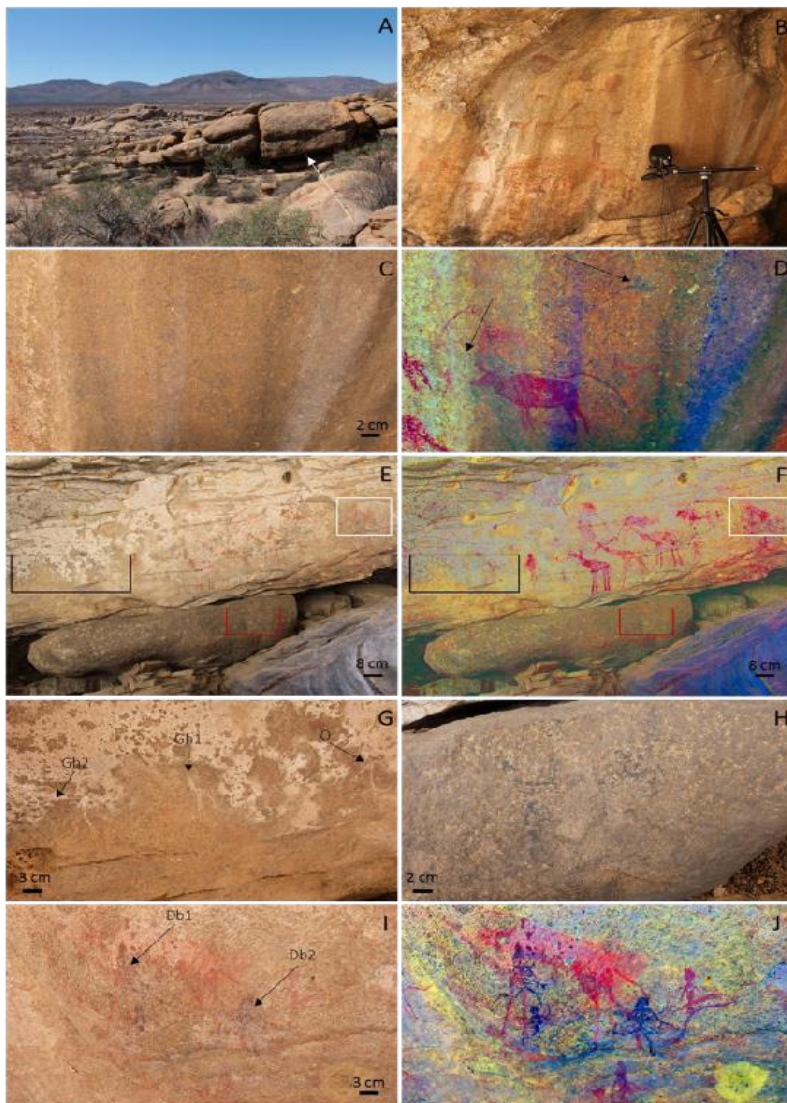


Figure 5.20 Ghost Cave's site. A, general view of the site, the arrow points the cave's location © Mathieu Lebon. B: The panel 1 during its in situ XRF analysis. C: Detailed view of the area o. D: DStretch treatment of the previous picture improving the reading of the various faded red and black representations. The arrows point at the black figures analysed. E: General view of the panel 2. The rectangles locate the different analysed: the black rectangle locates the white figures (insert G), the red rectangle corresponds to the black anthropomorphic representations, and the white one locates the dark brown figures, © Matthieu Lebon. F: Red enhancer DStretch treatment of the previous picture with the different areas located. G: The white representation. O: the ostrich, Gh1 and Gh2: the ghost figures © Mathieu Lebon. H: the black anthropomorphic figure. I: The dark brown anthropomorphic representations (Db1 and Db2). J: General enhancer DStretch treatment improving the visibility and reading of the figures.

f.Ethnography/ Ethno-historic Enquiries

The two local Ju/'Hoansi San men (Fig. 5.21) working as tour guides at the San Living Museum on the Omandumba West Farm were extremely supportive. They were the main source of ethnographic information in that they provided us with a basic understanding of animal tracks/spoors at the engraving site / Site OEF61. To them, knowledge of animals and their behaviour is the initial step in tracking them and ultimately in the hunting them. They emphasized that tracking is more than just following the spoor. Throughout the conversations, they pointed to the need to identify elements that may have been left in the environment by an animal. These elements could also be behavioural signs, such as scratches on trees or scattered leaves or, more obviously, dung, hair or other tangible remains. This allows them to accurately predict the whereabouts of the animal or to avoid dangerous encounters with predators (LIEBENBERG 1990).

Therefore, trackers use the signs left by animals in order to make sense of their environment. These conversations with the informants were recorded on video. I also took some notes and photographs along the way. The ethnographic analogies are presented in Section B, Part A of Chapter 6.



Figure 5.21 With me are local San informants at the rock engraving/ site OEF61 during interviews and figures identification session sat the site.

5.2.3. Section C: Data management and Analysis

a. Image processing and file management

In order to ensure that all images were accurately associated with their corresponding site database record, it was important that they were well managed when downloaded from the cameras to the computer. After each field campaign, I collected all images and stored them on various locations such as external hard drives, NHC database and cloud storages such as Cloud and Mega (Fig. 5.22 & Fig. 5.23).

Consistent conventions for file naming and folder structures ensured that images would be easily identifiable and could be readily associated with the correct database records. Backup copies were also regularly stored in separate locations. Images that required processing such as stitching to create Panoramas or 3D were treated on the application of Adobe Photoshop and photogrammetry software.

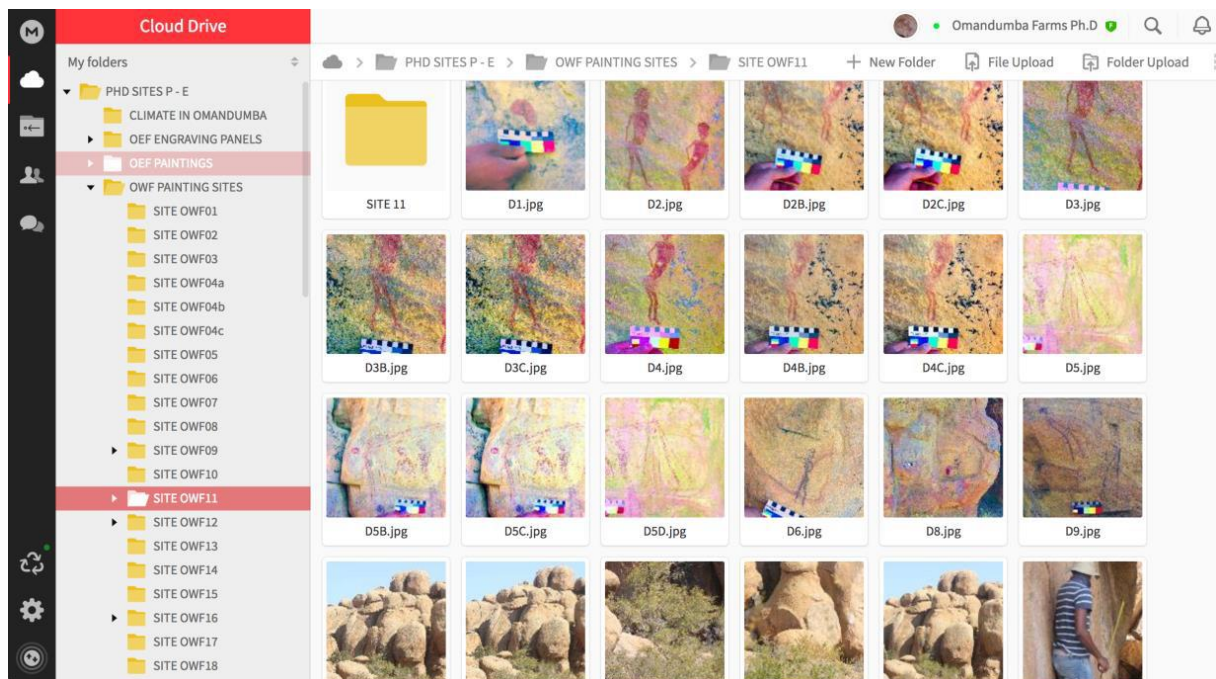


Figure 5.22 Mega Cloud folders where painting sites images and other site data are stored.

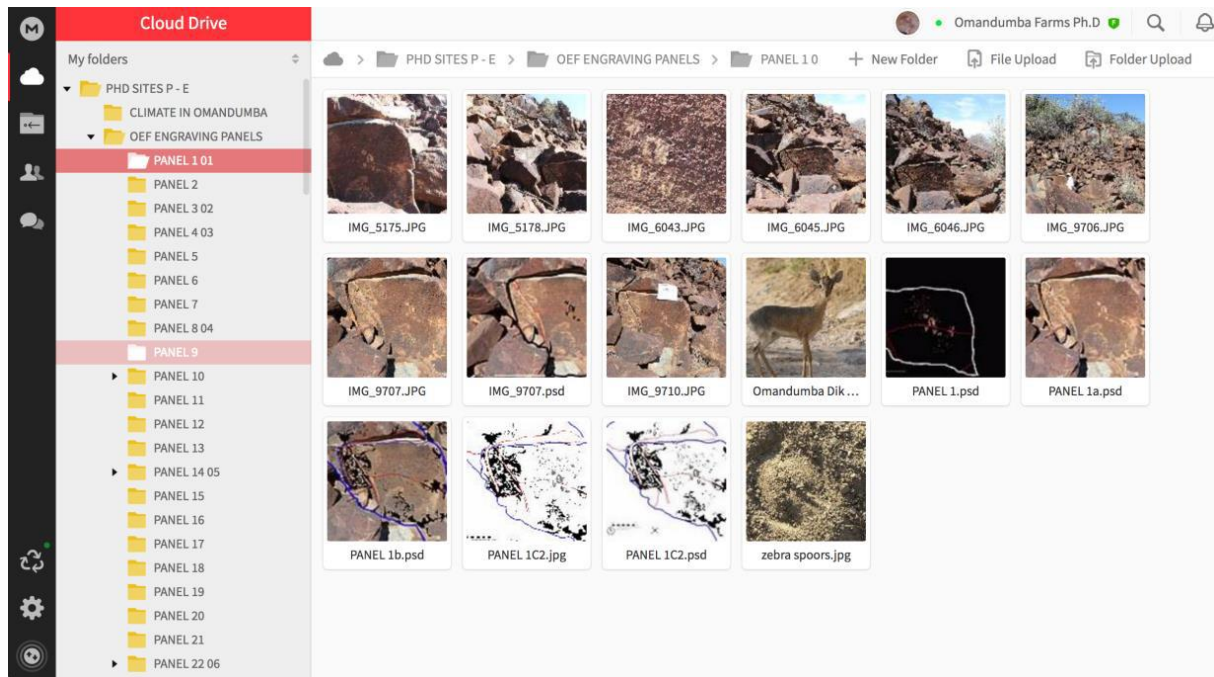


Figure 5.23 Mega Cloud folder where engraving sites images and other site data are stored.

b. Spatial analysis and maps

Spatial analysis is an important analytical tool that considers not only the iconographical representations of the rock art but also the physical properties of the sites, namely, where they are located and how they might have been seen (WHITLEY 2011). For this, all the GPS data were uploaded into a private Google Earth and then connected to the QGIS (Fig. 5. 26) and the database. It provided a broad overview of the site locations, their associations to the landscape variables as shown in (Fig. 5.24. & Fig. 25). Spatial analysis therefore investigated the landscape variables of the rock art sites such as in terms of site placement (1) elevation (2) proximity to water sources (3) proximity to trails (4) accessibility (5) aspect/orientation (6) and their visibility in the landscape (7).

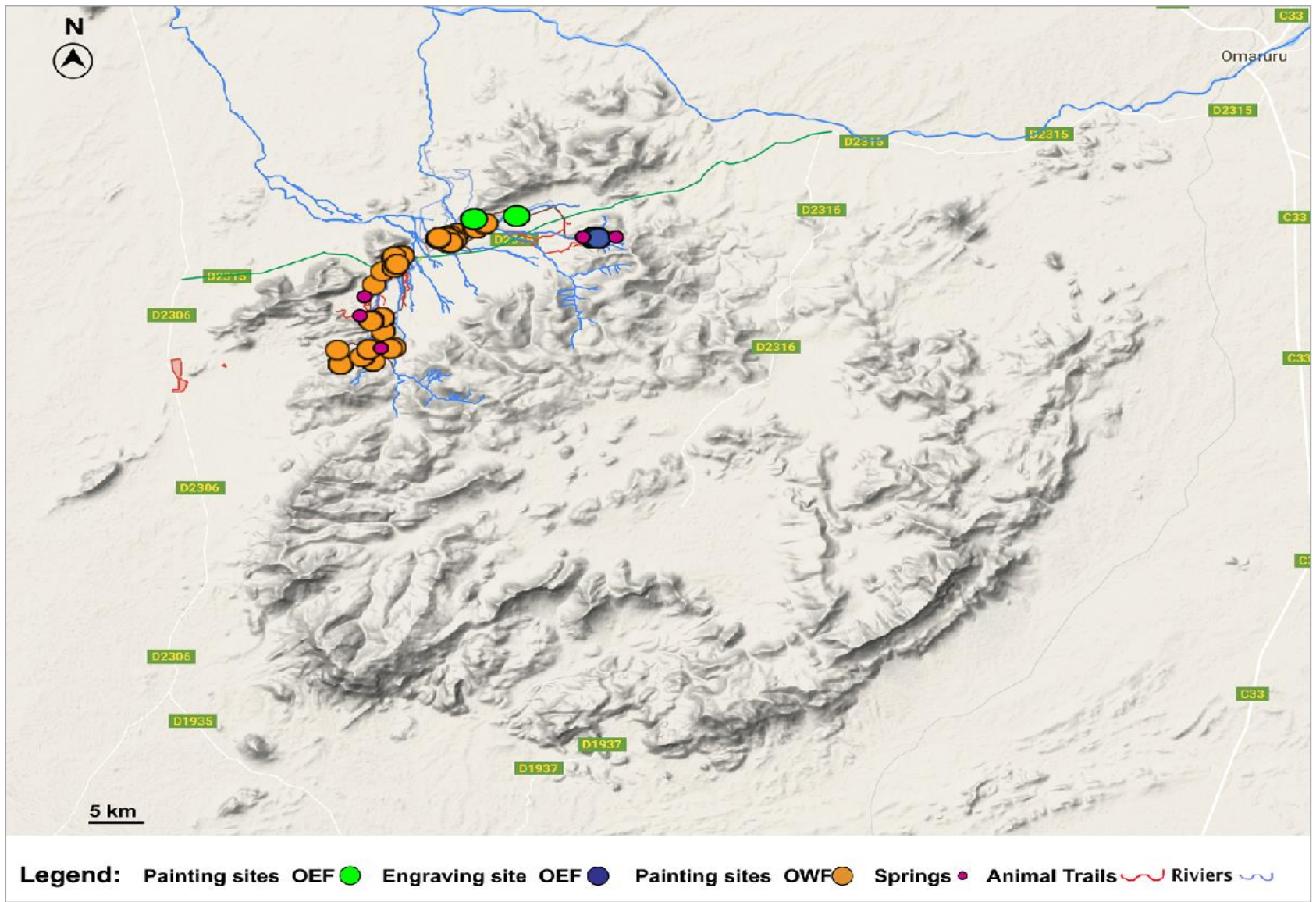


Figure 5.24 The general distribution of the rock art sites in OEF & OWF at 5km scale. Map credits: Google Maps & QGIS.

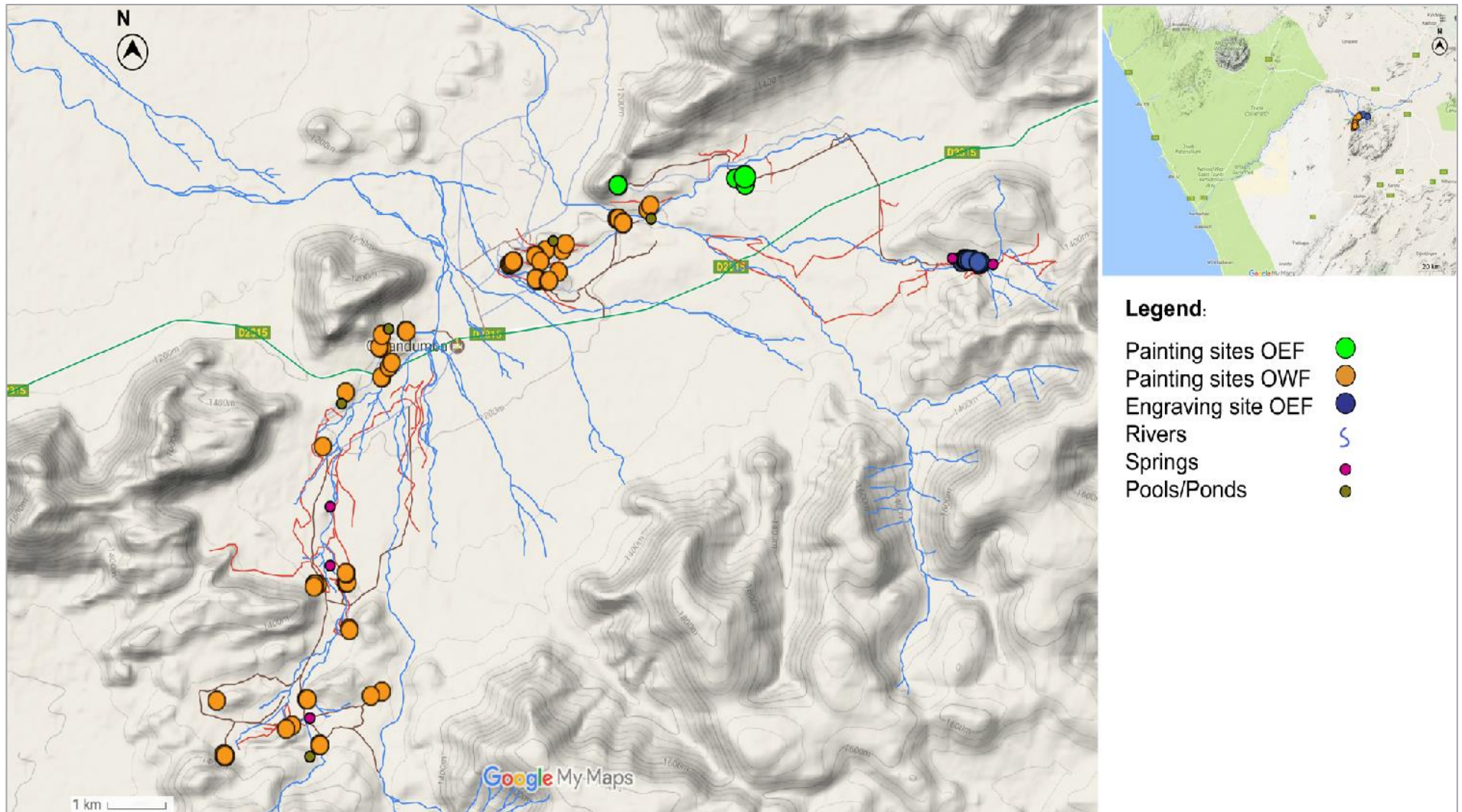


Figure 5.25 The spatial distribution of the rock art sites in OEF & OWF at 1km scale. Map credits: Google Maps & QGIS.

c. Site data record

The sites inventory data were archived in both the National Heritage Council Database as well on Google Analytics spreadsheet (Fig. 5.26), which allows for an easy and quick query of the data and creates custom calculations of the data. Information from Google Spreadsheet automatically feeds the database on QGIS, which makes it easier to request specific information on the sites. This was quite useful given the amount of sites recorded and the amount of information collected. Each site within this spreadsheet was organized according to their study areas.

Site No	Panel Name	Coordinates	Elevation
1	Owf01	The Last Boulder	1169
2	Owf02	Owf02	1168
3	Owf03	Owf03	1206
4	Owf04	The Bergsteiger Wall	1206
5	Owf04a	The Bergsteiger Wall	1206
6	Owf04b	The Bergsteiger Wall	1206
7	Owf04c	The Bergsteiger Wall	1206
8	Owf05	Schers Fissure	1203
9	Owf06	Owf06	215
10	Owf07	Speaking Kudu	1203
11	Owf08	Owf08	135
12	Owf09	Porter Boulder	135
13	Owf10	Owf10	90
14	Owf11	Sney Wall	270
15	Owf12	Sney Boulder	180
16	Owf13	Owf13	180
17	Owf14	Owf14	90
18	Owf15	San Living Museum	247
19	Owf16	Fire Area	225
20	Owf17	Shower Area	45
21	Owf18	Owf18	45
22	Owf19	Owf19	270
23	Owf20	Owf20	90
24	Owf21	Helmut Large Boulder	1210
25	Owf22	Owf22	112
26	Owf23	Owf23	180
27	Owf24	Owf24	90
28	Owf25	The Isakman Shelter	180
29	Owf26	Elephant Boulder	45
30	Owf26b	Giraffe Cave	180
31	Owf27	Owf27	180
32	Owf28	Owf28	270
33	Owf29	Owf29	270
34	Owf30	Christan Shelter	225

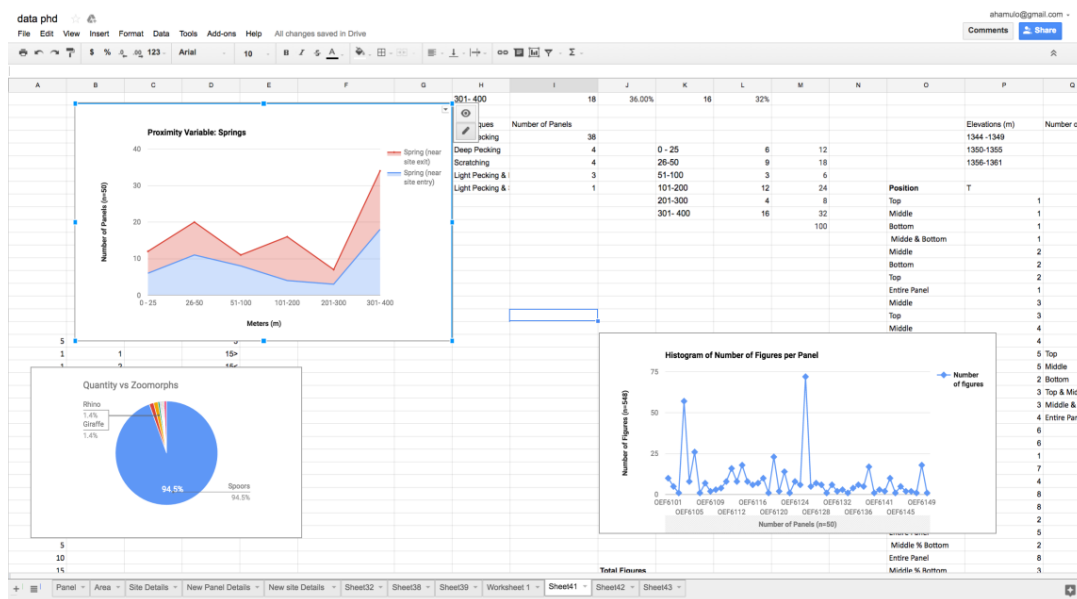


Figure 5.26 Top and Bottom are the screenshots of the Google Analytical Spreadsheet where information was stored and analysed.

d.Database Attribute

After digitizing the data and compiling it into a Google Analytics Spreadsheet, a record PostgreSQL database (Fig. 5.27) was then created, which was automatically fed by QGIS and data from Google Analytical Spreadsheet. It was created to extract specific rock art attributes and also to query statistical information about the sites. The attribute database is organized in data tables and comprises six variable categories: themes (1), element types (2), manufacture technique (3), panel and element count (4), types of artwork (5) and pigment used (6).

The location determined the site/panel placement in the landscape on boulders, rock shelters, granitic walls, caves, ledges/sills, ceilings and riverbeds. The themes element identified the presence of anthropomorphic, zoomorphic, phytomorphic figures, spoors, objects, as well as indeterminate and abstract forms. Techniques of production identified the presence of painted elements and engravings that were pecked, scratched, polished or abraded. Pictograph type detailed if the paintings were monochrome or polychrome. Paint colour determined if the paint fell according to one of the basic colour categories, namely, red, brown, white, black or orange. Panel and element count quantified the rock art at each site/panel. In total, the database had 62 variables for each rock art site. Appendix B provides a template of the database entry form.

The form is titled "OMANDUMBA Rock Art Database" and is organized into several sections, each with a title bar and multiple input fields:

- LOCALISATION:** Region, Site Owner, UTM Easting, UTM Scouting, Site Name, Panel ID, Elevations, Site Context.
- Landscape Cont...:** Orientations, Location, Positions, Distance From.
- Engravings:** Light Pecked, Deep Pecked, Scratched, Abraded/Polished, Others.
- Other Components:** Style Count, Superimpositions, Pigment Analyses, Associ. Archaeo, Archaeo Recomm, Anthropoic Actions, Animal Impacts, Biological Impacts, Chemical Impacts, Overall Conservat, Sites Open to Public, Mana. Recommenda, Site References.
- Landscape Situation:** Rock Type, Vegetation, Fauna, Site Type, Visibility, Figures Placement, Rock Surface, Sun Exposure, Proximity Variables, Panel Size.
- Quantity:**
 - Panel:** Est. Panel Count, Clusters Count, Paintings Panels, Engraving Panels, Site Total Count.
 - Elements:** Element Count, Total Elements, Painting Count, Engravings Count.
- Paintings:** Painting Type, Colour (s), Black, Brown, Red, White, Yel/Oran.
- Rock Art Elements:** Anthropomorphs, Zoomorphs, Therianthropes, Phytomorphs, Abstracts, Indeterminate.
- Comments:** A large empty text area for notes.

Figure 5.27 Omandumba farms rock art Attribute Database data entry form. The entry form has not being filled in.

e. Digital tracing of rock art figures

Digital image processing is one of the common techniques within the reach of researchers. In rock art research, available techniques used to extract information by computer manipulation of images includes, but are not limited to, the applications of ImageJ 64 (Image Processing and Analysis in Java), also known as DStretch Plugin developed by Jan Harman, as well as the Adobe Photoshop CS6 applications used to enhancing of rock art.

These applications permit processing procedures such as selective contrast enhancement tools, and studying the detailed figures and multiple images in superimpositions. Such applications provide a non-destructive method of recording and analysing rock art. In the research for this thesis, I have used the ImageJ64 plugin to manipulate colours and enhance faded images or improve the clarity of colours (Fig. 5.28 {left} and Adobe Photoshop CS6 applications {right}) in the analysis of both painting and engravings so as to facilitate further understanding and interpretation of the depicted figures (Fig. 5.29). Since the study located many painting sites, only 15/60 rock paintings sites were digitally traced, while all the 50 rock-engraving panels from site OEF61 were digitally traced by means of Photoshop software. The geology of the worked surfaces and the artwork techniques influenced the tracing techniques used.



Figure 5.28 Image manipulations by means of DStretch Plugin. (A) The original image while (B) is a DStretched image using LDS color at 12.5 scale. Right image shows various means of tracing of painted figures through Adobe Photoshop CS6

Conservation ethical considerations were applied during the pigment extractions from the five selected and suitable sites. This is, to ensure minimal damage to the visual integrity of the figures and possible future complications arising from the studies undertaken at each site.

Hence, the extraction was carried out by a pigment specialist, Dr. Matthieu Lebon⁴ while following the code of ethics and guidelines for practice of American Institute for Conservation⁵. For this, only minimum required microscopic pigment samples were removed from the figures through small scrapings technique using tungsten tools such as the sterilized scalpel blades and its handle. However, it was challenging to extract the pigments samples because almost all the painted layers are too thin hence only one sample per figure (per site) was obtained. The pigment residues – between 1mg to 2mg were collected for analysis. Microscopic samples locations were photographically recorded as shown in (Fig. 5.30), while a visual colour notation was made. To protect the visual integrity of the figures, very limited sample from a limited area of a figure was removed which can barely be seen by a naked eye.

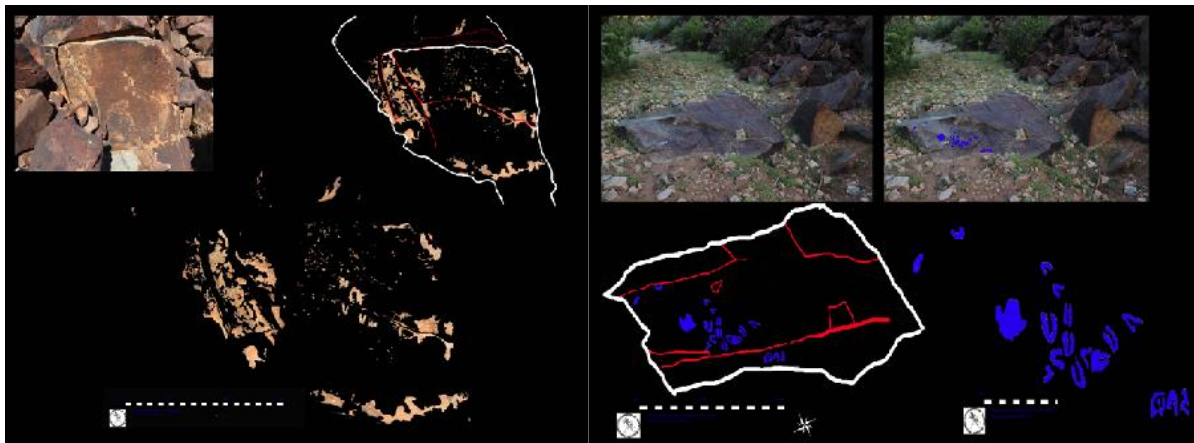


Figure 5.29 Various ways of tracing engravings through Adobe Photoshop CS6

The choices of pigment samples colours (black, red, white,) were of particular importance in order to establish their mineralogical and chemical compositions. The samples were then accurately stored in suitable and unused laboratory containers, properly labelled, bagged and exported for analyses. Although the quantities are usually very small, it is hoped that they will certainly provide some valuable information.

⁴Maître de conférences, UMR 7194 CNRS - Histoire Naturelle de l'Homme Préhistorique, Département de Préhistoire du Muséum national d'Histoire naturelle, Equipe "Archives sédimentaires et matériaux de la Préhistoire

⁵https://www.nps.gov/training/tel/guides/hps1022_aic_code_of_ethics

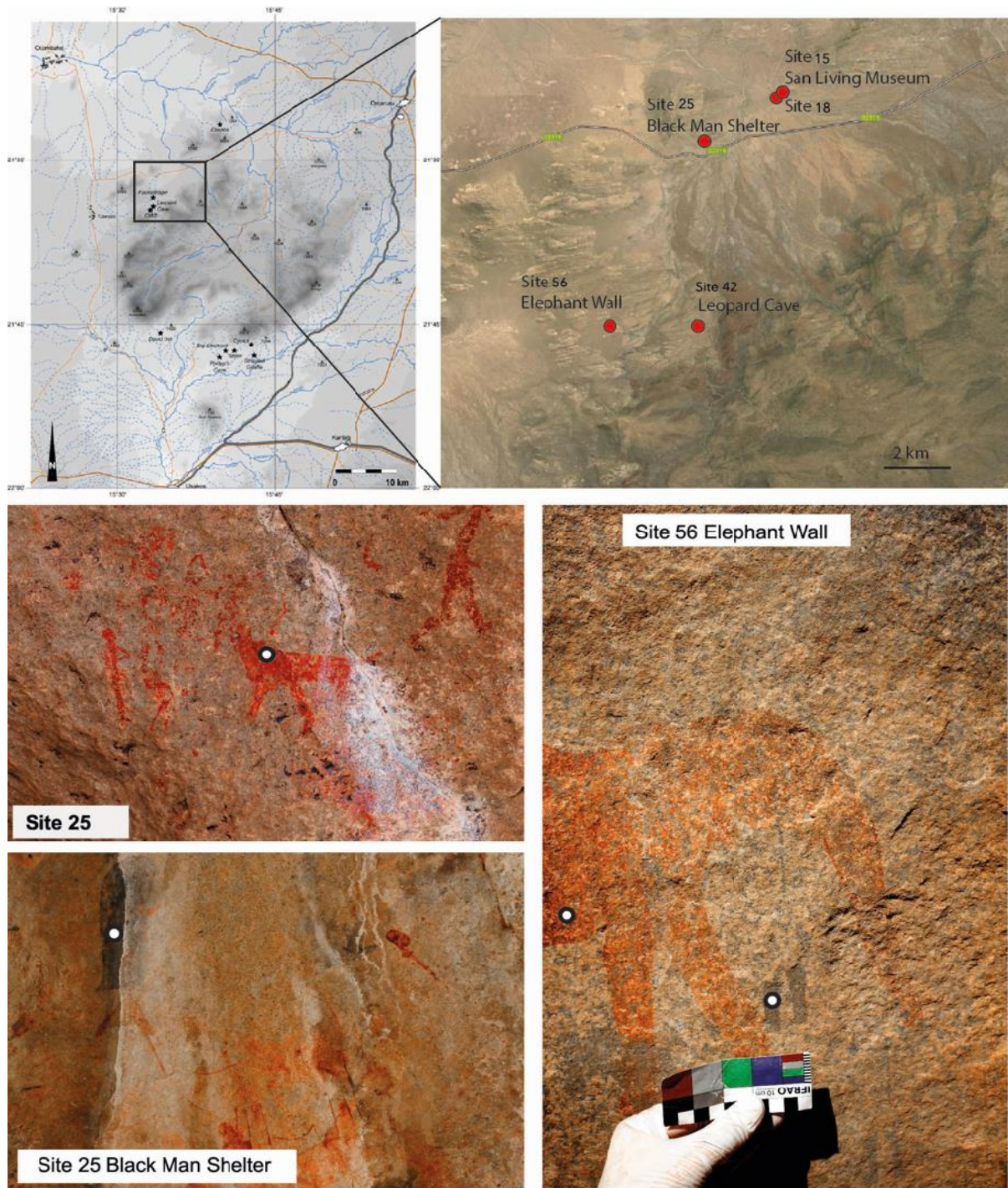


Figure 5.30 Shows various locations where pigment samples have been extracted from the painted figures at some of the selected sites. Photo by: (M. Lebon, 2015)

The Archaeological Laboratory Molecular and Structural (LAMS) from the University of Paris VI, under the direction of Philippe Walter carried out the entire noninvasively on non-prepared samples through the use of the X-ray Fluorescence (XRF) and the DRX spectrometer (Fig. 5.31). Such instruments permit the realization of analyses *in-situ* or directly on the sample and are therefore non-invasive. The instrument was equipped with an X-ray source monochromatic (Raie K- α of copper at $E = 8.04$ keV, divergence, 2.5×4

mmrad 20% FWHM, 170 million photons per second on the sample, the size of the lower probe to 180 μ m FWHM) who just focus on the sample hence this allowed the precise focusing of a beam into a preferred area of each sample (LAPAUZE 2016).



Figure 5.31 Left and right are the μ -DRX and XRF portable laboratories of LAMS, credits: M. Bondetti, cf. LAPAUZE 2016:47-48)

The acquisition of the data from the diffraction DRX and XRF devices as shown above are then processed using the software Fit2D in order to convert them into Diffractogram analyzable under the software Diffract Eva (Bruker) as shown in (Fig. 5.32).

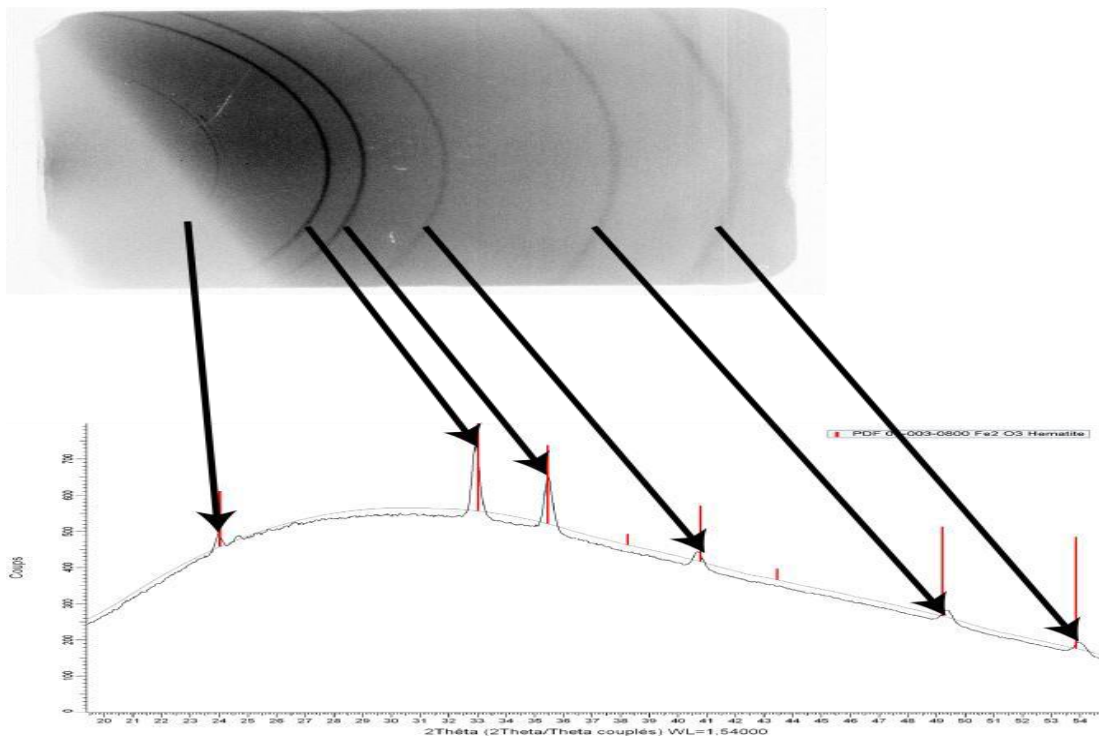


Figure 5.32 Imaging flat and Diffractogram, after: (LAPAUZE 2016:49)

Mineral characterization of the samples where carried out through the Infrared Spectrometry carried out on a vertex spectrometer 70 Bruker (Fig. 5.33) at the (Caractérisation et Datation des Archéomatériaux et des Archives Sédimentaires du Musée de l'Homme) of the Museum

National d'Histoire Naturelle. The device has a wide range of spectral middle infrared to distant (MIR-fir) between 4000 and 100 cm^{-1} , a resolution of 4cm^{-1} and an acquisition of 128 scans with a scanning speed of 5 kHz.

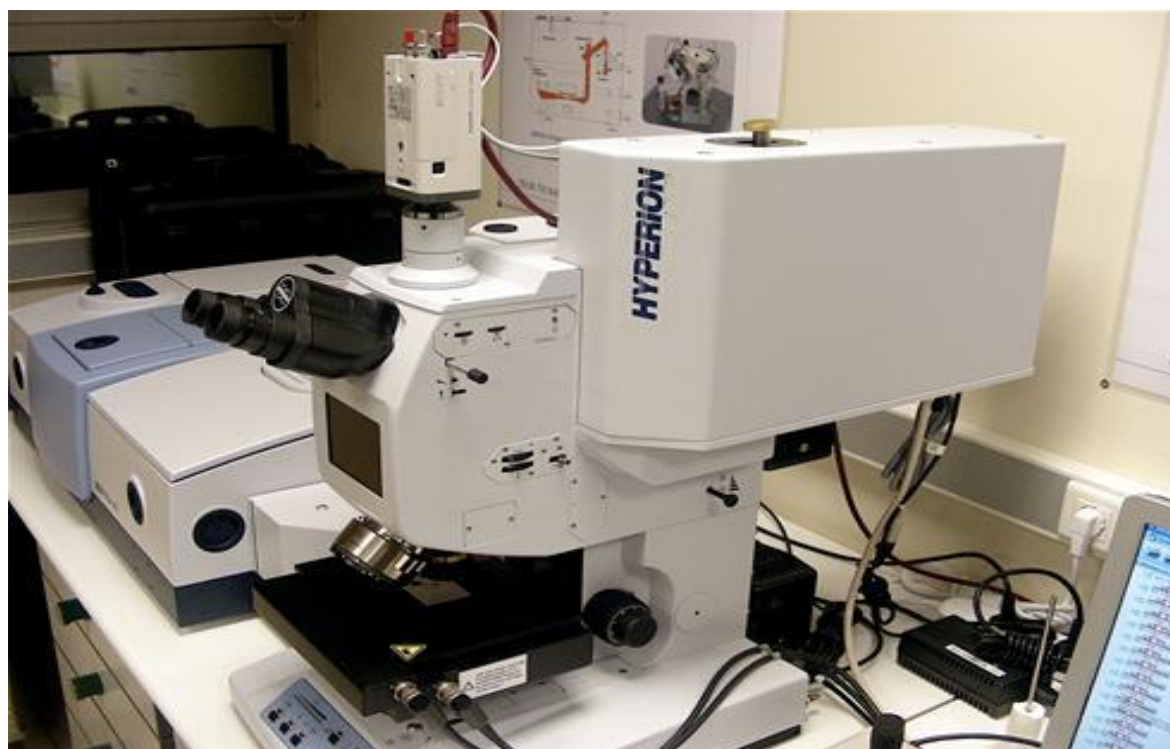


Figure 5.33 Infrared Spectrometer at the laboratory of MNHN/Musée de l'Homme, (After LAPAUZE 2016).

According to (LAPAUZE 2016), the Infrared Spectrometer measures the vibrational absorbance of the molecular groupings constituted in a sample through the infrared radiation. The equipment then allows the acquisition of oxides characterization from medium to distant infrared on wafer scale grapheme. She further stressed that the Infrared spectroscopy analysis can be conducted in the non-invasive manner however, this is only possible when surface characterizes the sample is confined within the nature of the underlying materials. In the case of pigments from Leopard Cave, site OWF42; they present a 51 irregular surface, which makes it difficult to analyse through non-invasive method. Hence, homogeneous powders were opted instead (Fig. 5.34 left). The powders were then analysed through the X-ray diffraction of the Département Histoire de la Terre du MNHN through the Bruker D2 Phaser (Fig. 5.34 right).

The diffracted rays have then been recorded by a detector, which converted the photons in digital images. The acquisitions have been conducted between the angles of 3 to $65^\circ 2\theta$, with a not of $0.02^\circ 2\theta$ All 0.2 seconds, about a dozen minutes per sample. Moreover, since the

most of the samples are iron oxides, a discriminatory filter of this element has been used for the purpose of not saturating in iron our acquisitions (Ibid, 2016).

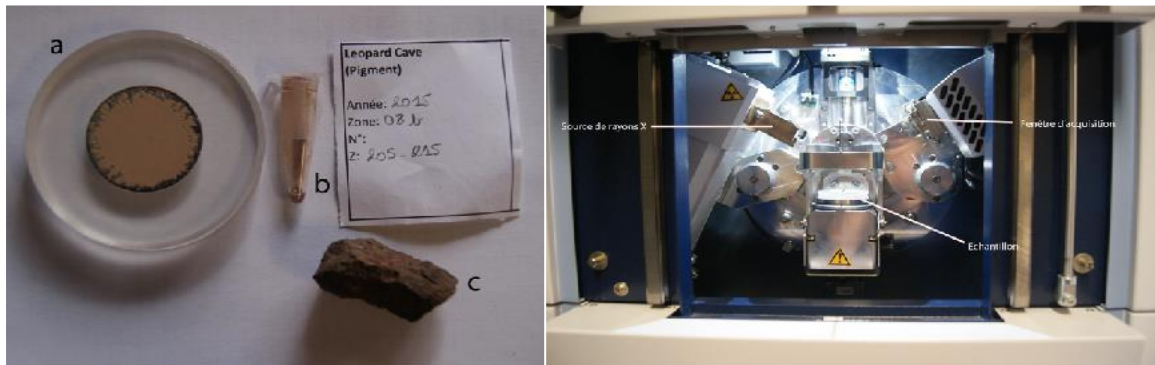


Figure 5.34 Left image shows the prepared powder from the ochre stone. A) Powder in the container. B) The powder and label of the sample while C) is a sample. The right image shows the apparatus for the DRX, after (LAPAUZE 2016:51-52).

The results of the pigment analysis of rock paintings within the study are presented in Chapter 6, section C.

5.3.Ethical considerations

Permission to carry out this research was authorised by the National Heritage Council, under Heritage Research Permit Number 23/2014, while consent to carry out in the Omandumba farms was approved by the farm owner Mr. Harald Rust, as well as from the local San men from Omandumba San Living Museum. The local San men approved the use of all the photographs taken during the fieldworks. They opted to wear their traditional attires in order to contextualise their authentic tradition in interpreting their ancestral heritage.

6.RESEARCH RESULTS

This chapter presents the results of the rock art inventory and data analysis at the Omandumba East and West Farms. The chapter is divided into three sections. Section A presents the results of rock painting sites carried out on Omandumba East and West farms. Section B presents the results of the engraving site in Omandumba East. The scientific analyses of the pigment from three contexts (archaeological, geological and paintings) in Omandumba, Brandberg and Burnt Mountain near Twyfelfontein world Heritage Site are presented in Section C.

6.1.SECTION A: ROCK PAINTINGS

This section provides the general descriptions, spatial and statistical analyses, as well as Rock Art morphological variables of rock painting sites in the Omandumba East and West farms. The general description provides basic descriptive data of 11 out of a total of 60 rock arts sites. However, such description covers all the sites in the study. It includes the site name, the panel number, GPS locations, site elevation the type of surface (vertical, horizontal or sloped), its orientations; it also includes the overall state of preservation of the rock art station and the figures; finally, it includes its dimensions, some brief observations about its location in the landscape, i.e., spatial distribution, vegetation cover, nearest water points and its neighbouring rock art sites. The graphical descriptive content of the site in form of the number art figures, its superimposition (if any), its themes, its history, its current state of conservation, as well as the site's associated archaeology have also be provided.

The spatial and statistical analyses focuses on landscape attributes such as the geomorphological settings of the rock art site, the proximity to water sources, accessibility, location and visibility of the rock art sites, orientations as well as the placement of the artwork on the rock art surfaces. Rock art morphological variables present the prevalence of rock paintings in the areas under study, the analyses rock art elements and typology, technique of productions, superimpositions, element counts, and surface archaeological artefacts present at the site/panel, as well as conservation aspects of the sites. However, even though only 16 sites are presented here, all the sites (61) general descriptions were analysed and provided.

6.1.1.Spatial organization of the study areas: Omandumba West and East Farms

The areas under study are two private commercial farms, the Omandumba West Farm (OWF) and Omandumba East Farm (OEF). A systematic documentation of rock art sites in the Omandumba East and West farms recorded a total of 61 rock art sites, which comprise of 60 rock-painting sites and a single engraving site. The rock-engraving site has 50 rock engraving panels, which are all central part of this study. Of the 61 recorded rock art sites, 2 rock art painting sites (OWF29 and OWF48) found at Omandumba West did not contain any rock painting figures because the artworks are completely faded and show only very few traces of pigments, retrieved through the application of DStretch. Nevertheless, the range of these two sites contained an unspecified low quantity of surface collections in form of Late Stone Age lithic artefacts, grey to brown sediments, as well as some charcoal evidence.

The survey cover areas of rock painting sites previously known and documented by some researchers such as (BREUIL et al., 1960; SCHERZ 1986; RICHTER 1991; BÖRNER 2013), as well as series of new rock art sites (paintings and engravings) that were known but unrecorded from previous research activities on the farms.

6.1.2.Spatial distribution of Rock Art Sites

Omandumba West Farm recorded a total of 56 rock-painting sites, comprising of a total of 1,637 individual rock art elements found on 64 panels. Omandumba East Farm (OEF) recorded 4 rock paintings sites containing approximately 167 artworks found on 6 panels, which brings the total of recorded painting sites in both areas to 60 and about 69 panels that contain of at least 1798 paintings. The spatial distribution of rock painting sites generally follows the natural geological formations of the area, which is formed by mountain ranges, hills, outcrops, kopjes and isolated boulders (Fig. 6.1) as well as water sources.

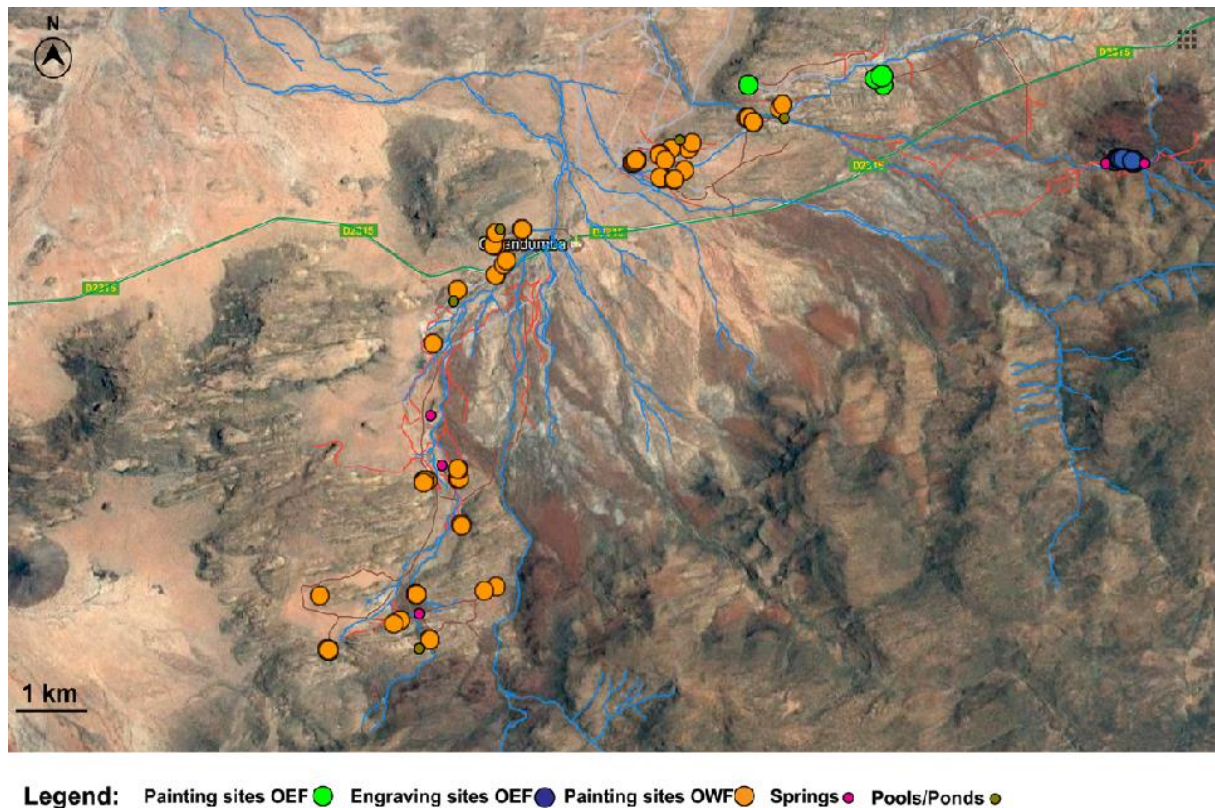


Figure 6.1 a Topographical map of Omandumba farms indicating the distribution of rock art sites. Credits Google Maps.

6.1.3. Selected Rock Art Sites

All the 60 rock-painting sites were recorded, documented and analysed. Basic descriptive data is also provided for each site. Because of the high density and volume of the information collected, I have selected 11 rock-painting sites among the 60 to represent the sites that have been studied (Fig. 6.2). However, both landscape and morphological variables of all the sites are presented in the analyses of all the sites. The selected sites are the prominent ones with most information; they are thus considered more representative of all painting sites since in terms of their distribution, placement, geomorphological types, and proximity to water sources across the landscape.

Of the selected 11 rock painting sites, 10 are from Omandumba West Farm (OWF09-OWF56) since the majority of recorded rocks painting sites were recorded on that farm. They comprise of Porters Boulder (OWF 09), Strey Boulder, (OWF 12) Christian Shelter (OWF 30), Fackelträger Shelter (OWF 39), Leopard Cave (OWF 42), Priests Shelter (OWF 46), Ostrich Shelter (OWF 47), Tuba Rock (OWF 50), Crown Boulder (OWF 50) and Elephant

Wall (OWF 56). Those from Omandumba East Farm comprise of site OEF60 also known as the Ghost Cave (Fig. 6.2) below.

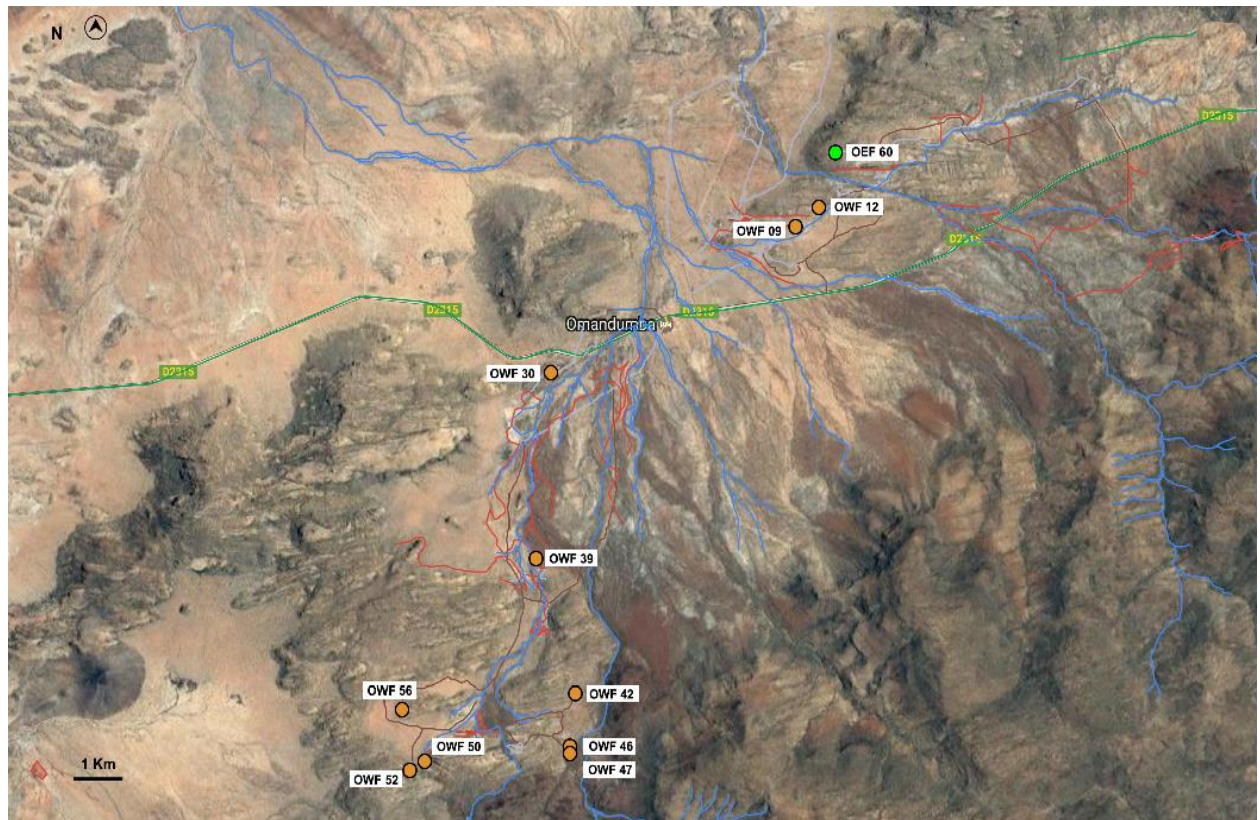


Figure 6.2 Distribution and location of selected rock painting sites in Omandumba West: (09) Porters Boulder, (12) Strey Boulder, (30) Christian Shelter, (39) Fackelträger Shelter, (42) Leopard Cave, (46) Priests Shelter, (47) Ostrich Shelter, (50) Tuba Rock, (52) Crown Boulder, (56) Elephant Wall and (60) Ghost Cave ©Google Earth.



“To understand one’s world, you have to live it”, Kxao /Lukxao
Fackelträger Site, Omandumba West Farm. Photo: Harald Rust

6.1.4.Part A: General Description of the Rock Painting Sites

The following part provides the general description of the 11 selected sites. These includes the site name, the panel number, GPS locations, site elevation the type of surface (vertical, horizontal or sloped), its orientations; it also includes the overall state of preservation of the rock art station and the figures; finally, it includes its dimensions, some brief observations about its location in the landscape, i.e., spatial distribution, vegetation cover, nearest water points and its neighbouring rock art sites. The graphical descriptive content of the site in form of the number art figures, its superimposition (if any), its themes, its history, its current state of conservation, as well as the site’s associated archaeology.

a.OWF09

SITE ID: OWF09
Local name: Porters Boulder
GPS Location: E15° 35 6/S21° 30 49.23

a.0.Site Description

Porter's Boulder or site OWF09 is one of the most visited sites in the Omandumba West Farm. A short walk from the San Living Museum access the site. The site itself has access to three eco-zones; the plains vegetated by perennial grasses, low and sparse bush, dry river courses and rocky hill-slopes. Geomorphologically, this oval shaped, brown-coated, coarse-grained boulder rest on top at the north most hilltop of Omandumba West farm (Fig. 6.3). Dr. Ernest Scherz discovered the site in 1947 during the same visit of *Abbé Breuil* in the farm.



Figure 6.3 The top image shows a panoramic view of site OWF09 as indicated in a red pointed arrow. The bottom image indicates the location of figures on the Panel.

The site stands at an elevation of 1204m. The

artworks on the boulder are placed in the middle and bottom of the painted panel measuring between 1m long and 3m high while the artworks are restricted to 3m visibilities. The site is

close to a cluster of four sites within 5 minutes reach further north of it. All the figures at the site been fully painted in red monochrome with no evidence of superimposition.

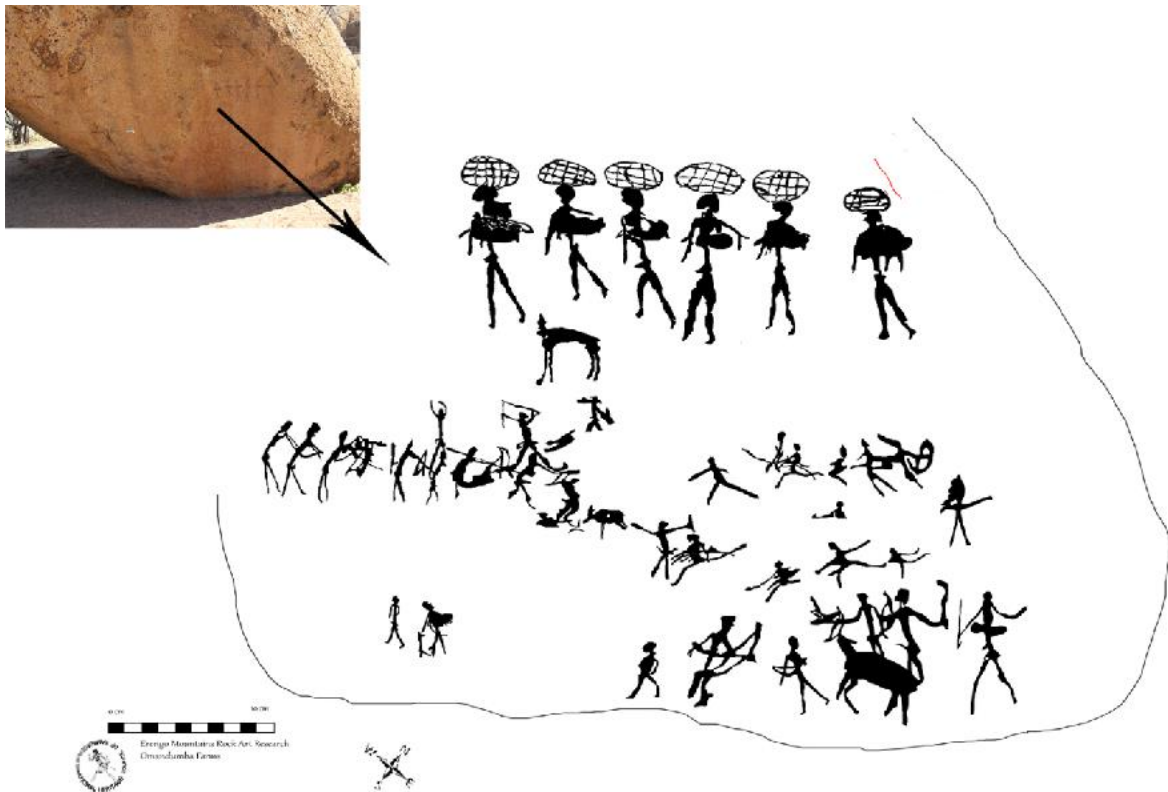
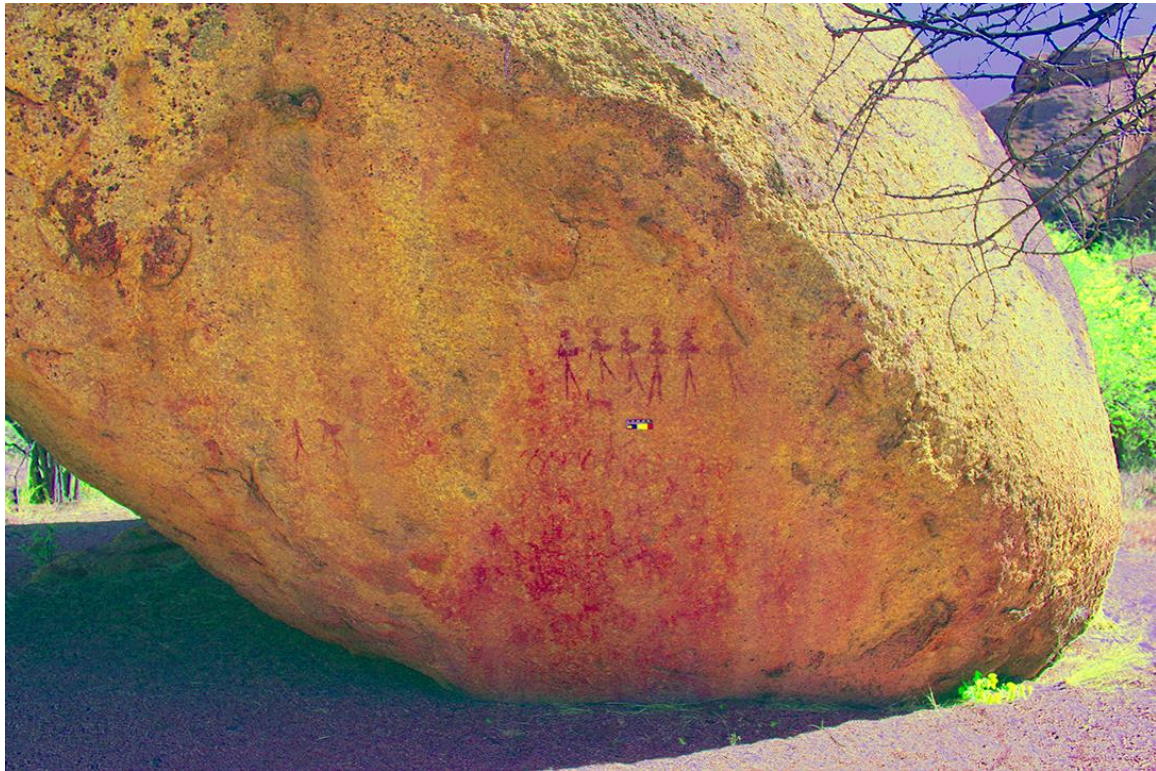


Figure 6.4 Top image is a DStretched Panel OWF09. An insert image shows the artworks on the panel while the bottom image shows digitally traced figures at site OWF09 on Adobe Photoshop.

The artworks are exposed by the sun throughout the day as the panel is oriented 110°East. Here, a total of 31 rock-painting figures were recorded, most of which are physically faded. Most of them were only visible through DStretch application.

Perhaps this was the reason why Breuil recorded only 7 figures initially and made no mention of others. Among the recorded figures, there are a total of 25 human figures with varying sizes between 7cmx4cm and 5cmx5cm. The figures comprised of various group of 6 very detailed men arranged in a row carrying what appears to be secured bundles or netlike baskets on their heads (Fig. 6.4). They are also depicted walking westwards. The rest of 19 figures depicting mainly male figures are placed immediately beneath a headless springbok figure. They are shown in predominantly in hunting scenes carrying hunting equipment, mainly long sticks, bow and arrows while others are depicted walking westwards with clear relation with each other.

In addition to human figures, the panels had also registered about 2 headless animal figures. One of these is a springbok measuring 8cmx6cm while the second one is headless kudu located beneath of all figures measuring 9cmx7cm with a human figure standing on top of it. About 4 indeterminate figures were also recorded in the inventory. All of them are poorly preserved, and coated with dust. This might be attributed by the frequent visitors and fact that the site in close proximity to the pathway leading to other sites in this locality. Other concerns at the site include extreme sun exposure and run-offs from past rains as well as human impacts in form of possible touch of artworks by some visitors.

a.1.Associated Archaeology

No single surface collection was recorded at the site. And if there were surface collection, it possible that they were likely displaced or pick up by visitors.

b.OWF12

SITE ID: OWF12
Local Name: Strey Boulder
GPS Location: E15° 35 36.59 /S21° 30 34.4

b.1.Site Description

Stray Boulder is also referred to as the “Fundstelle Monument” in some of the literature. It is adjacent to Stray Wall (previous site). There is a narrow passage separating the two sites (Fig. 6.5). Geomorphologically, it is a single standing pinnacle of about three meters high formed by several smaller boulders completed by a fungal capstone (BORNER 2013:104-105). It is found on a crest of a little saddle, which cuts the hill across.

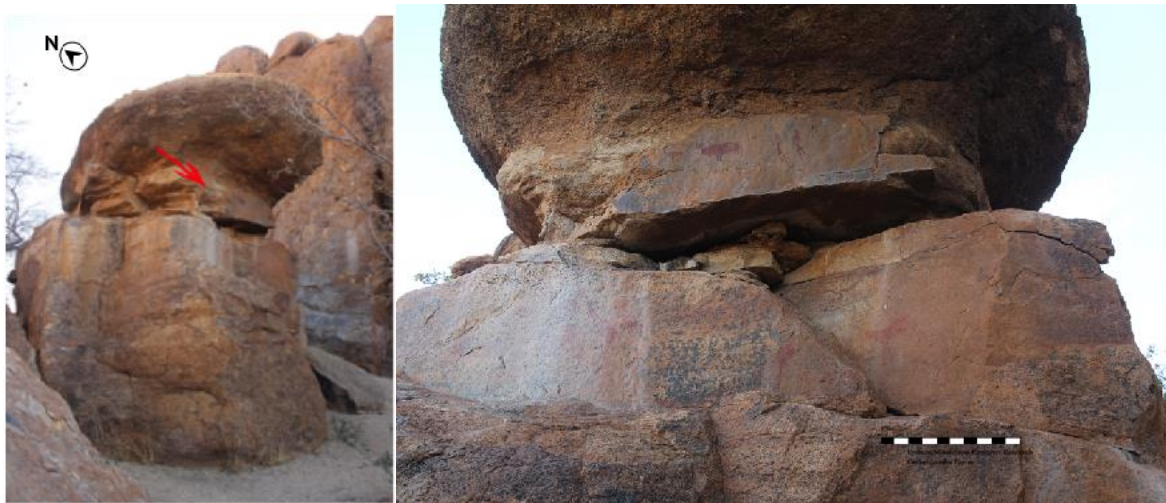


Figure 6.5 The image on the left shows the site and the location of artworks on the panel while the right image shows the original panel w figures at site OWF12.

The site is the last reference site of the well known ‘bush walk organized by the local San Living Museum of the farm, this before descending down the hill. This coarse-to-smooth-grained granitic boulder stands at 1209m above sea level and it is oriented at 290°W. It is visible from about 15m as a result of its elevated rounded mushroom-shaped crest of a small saddle that cuts the hill across a rocky spur, which overlooks the Anibib farm to the west and Omandumba West to the north. Mr. Strey discovered the site at the same time as the previous site. The site was then recorded by Abbé Breuil, BREUIL (1960), who described accessing and recording the artworks “impossible without a ladder” (BREUIL 1960:7) on account of the geomorphological nature of the boulder. The artworks at the site were executed on a smooth granitic large sill or ledge measuring 4m long and 0.8m high (Fig 6.1.3).



Figure 6.6 Shows the reconstructed image site OWF12. The top image has been DStretched at LDS 15cm scale and then Photoshoped while the bottom image have also been traced on Photoshop application. Two phases of superimpositions are shown. The 1st phase are images in red and the 2nd phase are figures in brown colour.

There are two clusters at the panel. The first one, which contains prominent paintings, is located on the sill/ledge at the top of the boulder, while the second cluster is located on another ledge beneath the first one, separated from the first one by a large crevice. Most of the paintings at the site are well preserved because they were painted in deep red and the fact

that the mushroom-shaped crest is resistant to weathering activities such as rain and, to some extent, from the sun. There is a big tree immediately in front of the site. It is the same height as the boulder, hence obscuring the site from a far distance. Fortunately, it does not come into contact with the ledge containing the artworks. Two phases of overlapping of figures have been recorded (Fig. 6.6) at the bottom cluster where two figures have been superimposed on other elements. Almost all figures are simply adjacent to each other, shown in a two scene with clear relation to each other.

Here, about 18 rock paintings figures most of which are painted in red monochrome have been recorded. One particular prominent figure identified by BREUIL (1960:7) as a *Nyala tragelaphus* was painted in bichrome (red and white). White pigment is one of the uncommon pigments in rock paintings of Omandumba, and here it was used in combination with deep red colour to distinguish features from the bodies of animals, such as the figure found in the first cluster *Nyala tragelaphus*. The artworks are visible from a distance of 3m. They are a small measuring between 8cmx6cm and 5cmx3cm respectively. Among the recorded artworks, human forms accounts for 10 figures. We suspect that there could be more human figures on this panel especially on the second cluster but they are badly faded and could not be read properly even through the D-stretch technique.

In the first cluster, most of the artworks are surprisingly well preserved; even those painted in white pigment remains well preserved despite the exposed position of the crest to the sun and other weather-related actions. About 4 human figures found in the first cluster. Two male hunters are painted in a deep red monochrome. They have decorated hairstyles, a slender and thin backline, thick thighs and legs from waistline that appear to be decorated. They hold bows and arrows walk north towards the edge of the sill following the Nyala and another headless four-legged antelope, which we suspect, could be a springbok figure, this based on its morphology and size which is similar to general pattern of the springbok in the study. The other two human figures in this cluster are painted in a very weak red pigment and are very faded. They are not visible to the naked eye, but can be discerned through DStretch. They are flanked by the Nyala figure, as well as deep red painted figures facing south, the opposite direction, also bearing weapons. The rest of the human figures are found beneath the second cluster. Most of these figures are faded. However, we were able to identify and record a noticeable larger human figure, which was painted in outline using a dark brown pigment. This was located on top of the animal figures (giraffe and kudu) and depicted seated with its

legs apart. It had long hair with a hairstyle. Others are depicted walking steadily, following a headless oryx facing north.

Animal figures are the second most dominant figures in the panel and they account for 4 items in the inventory. They are also fully painted in red pigment and are facing west. The single giraffe measures 17cmx8cm and is flanked by two other animals. A headless kudu and the unidentified figure of a large antelope with its mid-section to the back painted only. The giraffe is shown with its four legs, which gives a sense of movement towards north. It is also very stylized, detailed and represented in a lateral perspective. It has highly naturalistic features such as its well-defined elongated narrow neck, a head and its curved backline and its exaggerated hairy tail that reaches the ground. Following the giraffe is a single headless kudu similarly painted in deep red monochrome with its stripes emphasized either with deep red or brown pigment. It is located slightly above the giraffe's lower back and there is a human figure emerging north from it but there is no contact between these two figures.

The animal appears to be standing still and its back line and other anatomic features are well defined. There are two springbok figures 2, one of which one is headless and is located in front of the nyala while the other is located in the second cluster behind other figures. The indeterminate category accounts for three figures. All these figures are located in the second cluster on the panel immediately beneath the giraffe. The second indeterminate figure is that of an antelope figure which has a few basic anatomical parts (legs, tail, lower back) that qualify it to be included in the animal category but which lack the diagnostic features required to determine the exact species. According to Tilman Lenssen-Erz (LENSSSEN-ERZ 2001: 285, 2004:145-46, 2008:37-47) this site fits the profile of Class A sites which were likely to function as landmark or waymark sites, located along the natural travel routes or near remarkable feature along such routes. This is reinforced by the fact that the site is uninhabited, its located near conspicuous landscape features such as passages or saddles in the mountain with few human traces like rock art and artefacts.

b.2.Associated Archaeology

No surface collections.

c.OWF30

SITE ID: OWF30
Local name: Christian Shelter
Number of Panels: 2
GPS Coordinates: E15° 33 3.58/S21° 31 57.2

c.1.Site Description

This site stands at an elevation of 1233m on top of a prominent steep slope or kopje. It is locally known as Christian Shelter. Christian Rust, the eldest son of the farm owner Mr. Harold Rust, discovered the site back in 2007 and this how it got its name. The site itself is located not so far from Omandumba West farmhouse, as well as the principal road (D2315) leading out of the Erongo Conservation area towards Tubusis village. Geomorphologically, it is a huge yellowish and fractured granitic boulder standing vertically just below one of the biggest Erongo massif kopje overlooking and providing one of the best views of the valleys, small outcrops and hills in Omandumba West farm (Fig. 6.7).

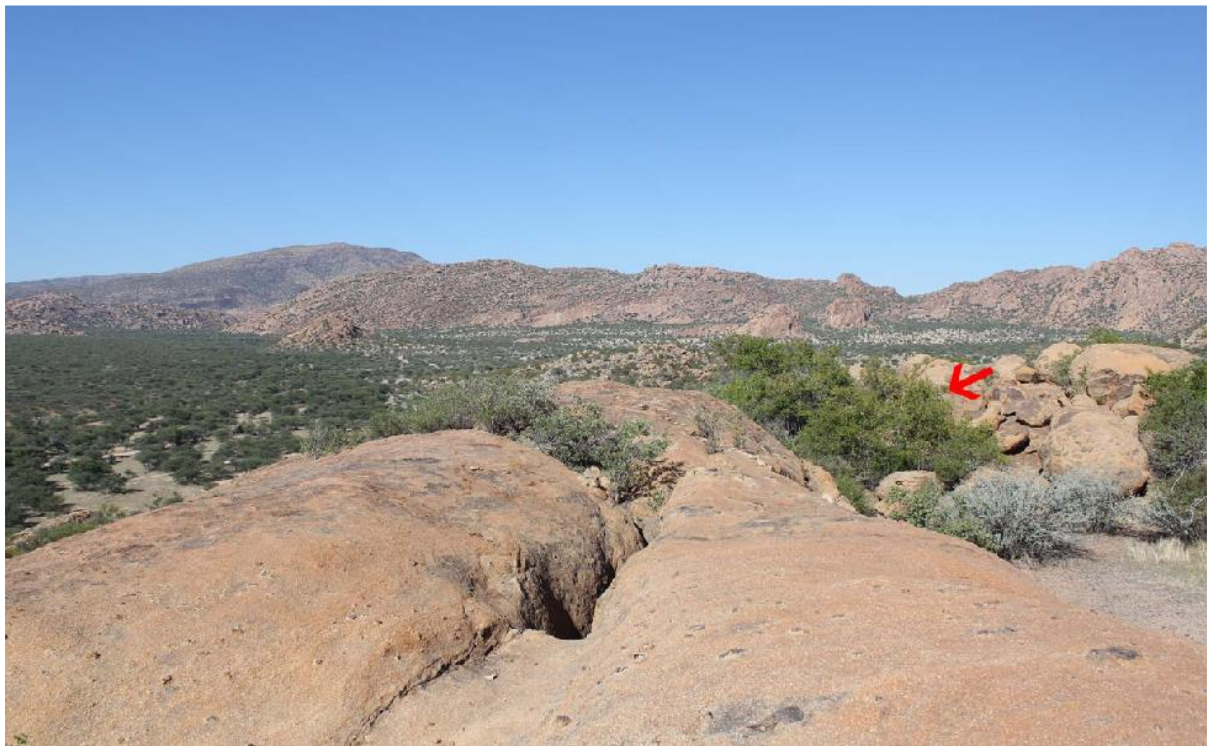


Figure 6.7 Shows the location of the site in the landscape as indicated by pointed arrow.

Accessibility to the site is rather challenging due to the steepness of the kopje. It is slightly easier from the lower edge of the kopje near the main road and ascending the smooth and somehow slippery granites surfaces until the highest steep slope where a sharp descent is required on reaching the site. There is a relatively small cave-like shaped area bounded by granites leaning against each other, providing ample space for a living area. The site contains

two panels separated by a huge fracture in the middle of the boulder that broke and split into two, but it is stable with a plant growing towards the site of the second panel, its leaves and branches brushing onto the painted surface.

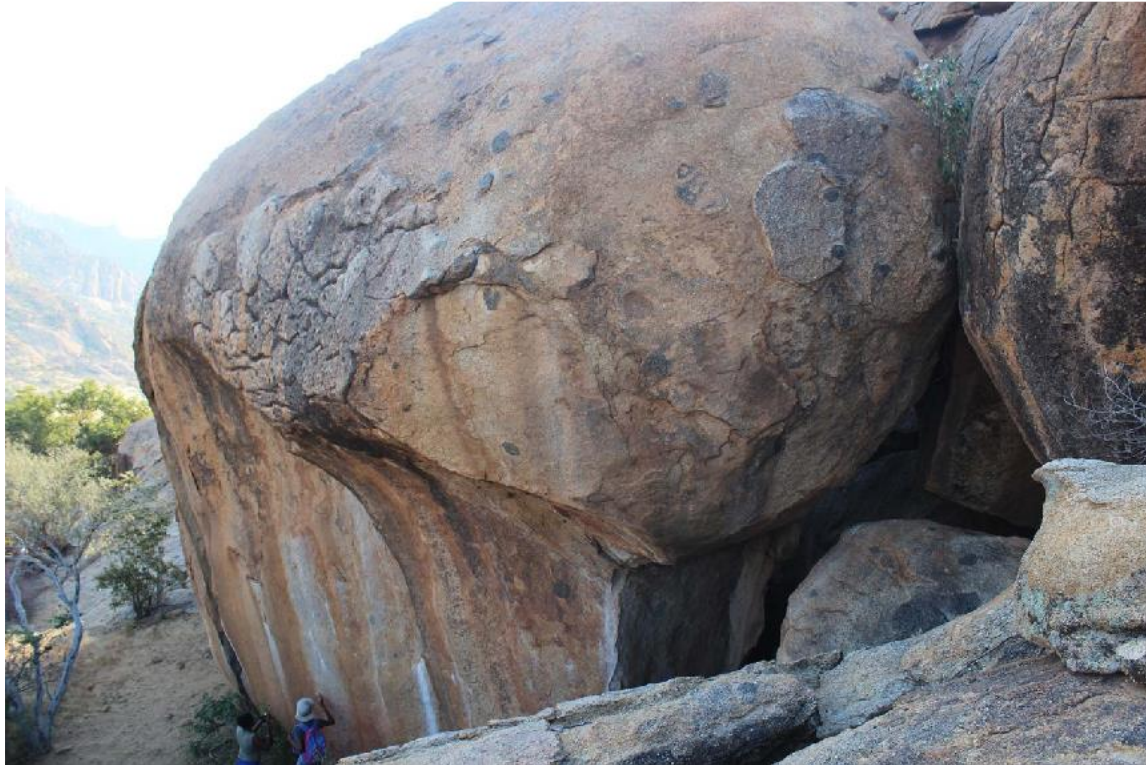


Figure 6.8 The image shows the painted boulder of site OWF12 in the landscape. The boulder is sitting on top of a kopje with restricted movements around it.

The current state of conservation is moderately good to very poor due to the high degrees of run-off as some sections of the panels are covered by a white and grey wash mark that partially obscures figures resulting from a mixture of dassies' urine and perhaps bird droppings on top of the boulder that could have been washed down by rain run-off. Other natural factors such as sun exposure, wind, exfoliation, dust accumulation, silica depositions, and vegetation growing near the painted surface have also been recorded. Some figures are faded while some show only few blobs of pigments as a result of exfoliation. The scattered traces of pigment demonstrate that there were a number of paintings on the panel's surface of the shelter. However, not all the figures have been completely obliterated as many figures are still identified and recorded. These panels contain nearly three clusters within a distance of 1-6m away from each other and contain a variety of painted artworks.

Artworks found at the first panel are in a good condition while those at the second panel are badly weathered by run-off erosion, as well as some weathering processes; hence, some artworks appear faded or washed away. Others, especially those painted in deep red, are in a

good condition. Superimposition is evident at the panel; however, all figures are painted in the same color making it difficult to establish older figures from younger figures particularly at the second cluster. The site contains an excess of 79 recorded rock paintings of varying subject matter and scenes that are spread out horizontally at two panels measuring between 12cmx9cm, 11cmx10cm, 10cmx8cm, 8cmx6cm, 7cmx5cm, 5cmx4cm, 4cmx4cm, 3cmx3cm, 2cmx2cm and 2cmx1cm I sizes respectively.

c.1.1.Panel OWF30a

The first panel is oriented at 225°SW overlooking and overlooks the wide-open landscape. It also serves as a direct access to the open area in the valley and the artworks are visible at less than 3m distance range. The panel is 1.5m long and above 10m high. The first cluster contains 19 recognisable artworks executed at the bottom of the panel. These figures are in good conditions however, run-offs has created wash zone on the left side of the panel obscuring some figures –about 10 of them, most of which were severely damaged and are not visible on DStretch application. There is only evidence of red stains of pigment. Other concerns at the panel are the sun exposure as well as some vegetation growing right side of the panel. The panel exposed to the sun throughout the day hence it was only possible to document it late afternoon.



Figure 6.9 Is the original image of the panel indicates the location of figures on the panel. Image at 10cm scale.

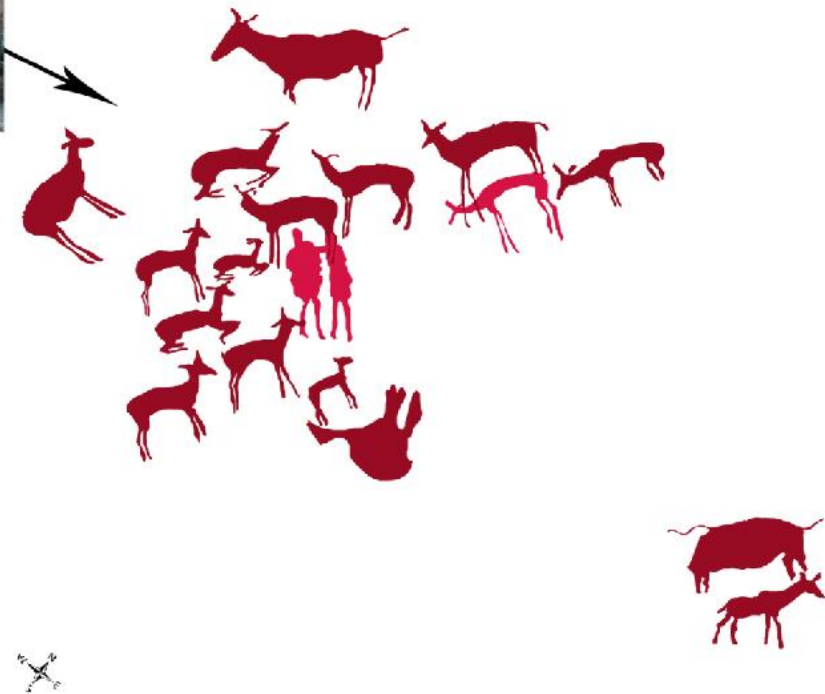
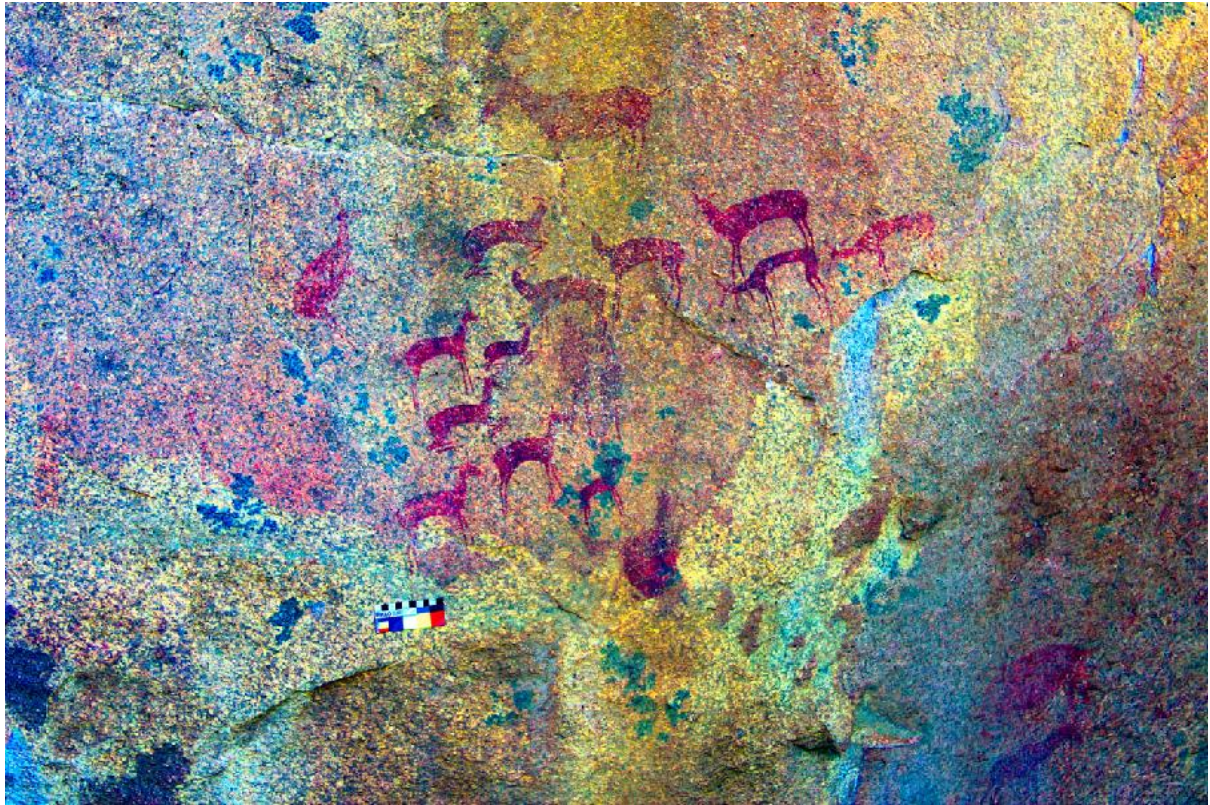


Figure 6.10 The image on the left shows the location of artworks on the panel while the image on the right shows some of the traced figures of panel OWF30a. Two Phases of overlapping exists. The earlier (phase 1) figures are painted in red color and were succeeded by brown figures (2nd phase). The insert image has been Photoshoped.

Here, anthropomorphic figures account for 2 human figures. The figures have been juxtapositioned among the herds of different springboks with one human figure overlapped by springbok hind legs, (see Fig. 6.10).

Human figures are depicted walking, bearing no weapons while facing northwards. One of human appears to extend his arm on other human in front. Zoomorph corpus account for 16 figures at the panel. Thirteen of these are springboks facing each other that are likely to be resting while others appear to be slightly alarmed. Some of the springboks are depicted standing while others are sitting with their legs crossed facing each other (east and west). In addition to the springboks, a kudu is also depicted at the scene; possibly a female one located slightly top left of the springbok's figures. There is also a zebra or Quagga "Eguus quagga guagag" figures located on top of the springbok herds facing south. There is also an animal, probably a rhino (its physical morphology) located lower right bottom on top of springbok figure. The animal is quite strange. Its head is missing and there is a small thin wiggly line on top of its hump. The last category is that of indeterminate group. Most of these figures are poorly persevered and we counted about 10 elements, located at the wash zone, but are barely recognisable. Among them is one indeterminate figure just beneath the main cluster of figures.

c.1.2.Panel OWF30b

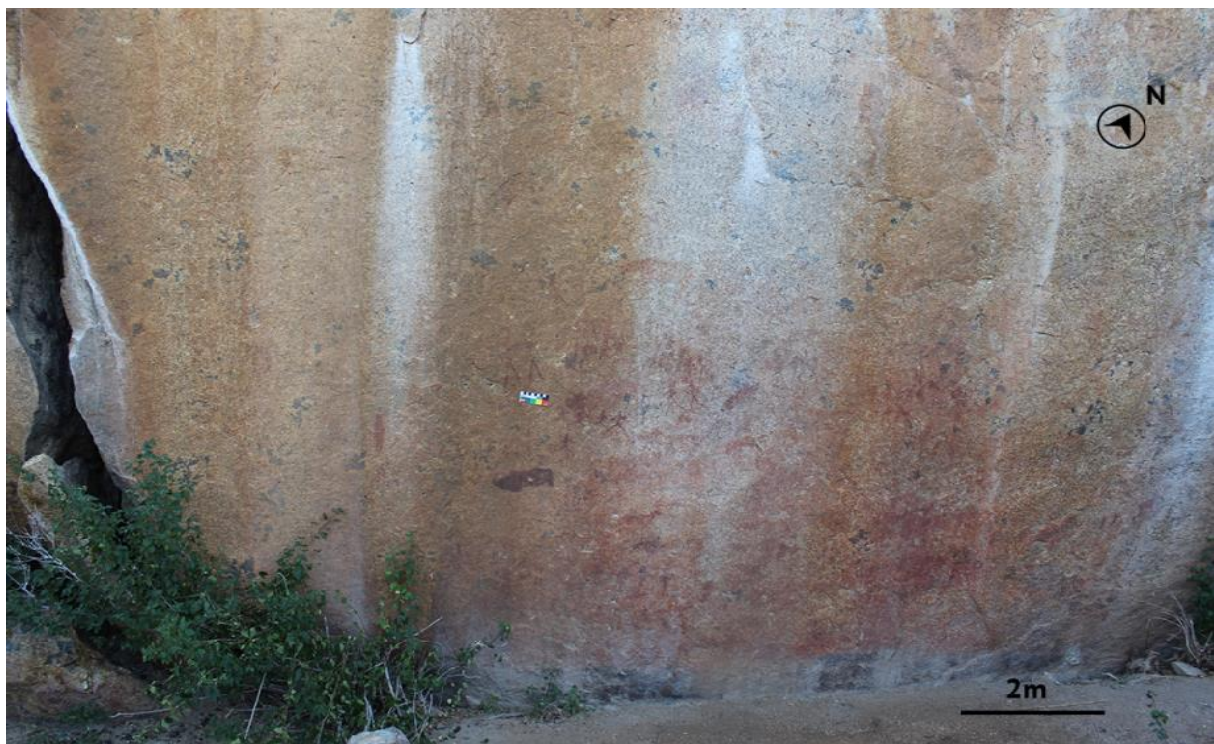




Figure 6.11 Top left image shows the original image of the panel indicating the location of figures on the panel. Bottom image is the DStretched image of the panel. While the bottom image shows the traced panel with only visible figures at the panel. Three Phases of overlapping exists. The earlier (phase 1) figures are painted in red color, succeeded by brown figures (2nd phase) while all orange figures are appearing in (3rd phase). The insert image has been DStretched at LDS 15cm scale.

The second panel located right side of the previous panel and immediately after a large fracture and some vegetation. The panel is oriented towards 134°SE while the figures are mostly facing east and few to the west. The panel is measuring 2m long and 10m high. The panel contains approximately 51 artworks, however the majority of these are partially faded. The artworks are executed at the bottom of the panel with less than 5cm space before the ground.

They are painted in red monochrome with some figures superimposed on each other and visible only from 2m ranges. However, those that have been superimposed are very difficult to deconstruct due to their poor state of conservation. Among the dominant figures at the panel are the 31 human figures, which consist mainly of male figures that have similar depictions, and scenes to those found at other sites. They are painted walking, in isolation, in pairs or groups bearing bows, arrows and sticks and to some extent quiver bags. Some are painted running, perhaps hunting, as they are following herds of animals. Among human figures, women only account for 3 figures and are depicted holding sticks and some are holding children in their hands. A total of 11 recognizable animal figures have been recorded at the panel, including small and large antelopes, mainly kudu that account for 2. There are also 2 springboks and 1 duiker buck. In addition, 1 quagga, 1 rhinos, 1 bee swarm, 3 bees have been recorded. Indeterminate animal figures account for 6 figures that appears to be faded as well as 4 completely indeterminate figures.

c.2. Associated Archaeology

Among the surface collection recorded in and surrounding the site included fragments of potteries, ostrich eggshells, a grinding stone, a pestle, hearths sediment and lithic artefacts of basalt and quartz origin from the Late Stone Age periods (Fig. 6.12). These artefacts are not in large quantity, hence the sites was likely used as a short-term living.



Figure 6.12 Shows sediments and some surface artefacts found in the shelter. The top image shows some stone tools with disturbed site sediments while the bottom image shows some fragments of potteries, debris from stone tools productions and a pestle with brown pigments.

d.OWF39

SITE ID: OWF39
Number of Panels: 2
Local Name: Fackelträger also ‘Torchbearer Shelter’
GPS Coordinates: E15° 33 3.61/S21° 33 27.86

d.1.Site Description

The well-known Fackelträger shelter is one of the prominent archaeological sites in Omandumba West Farm and it is located on the northwestern edge of the Erongo Mountains. It is found in a rocky outcrop (Fig. 6.13). ‘Fackelträger’ in the German language, means the ‘Torchbearer’ as a result of a prominent eponymous scene of nine women carrying torch-like objects (BREUIL et al., 1960:35). The site lies about 3.68 km southeast of Omandumba farmhouse and approximately 4 km south east of the main gravel road D2315 that run through Omandumba farms. The site is one of the most visited rock art sites in Omandumba West farm and is reached by driving on a small-established farm road from Omandumba West farmstead - by guided tours only. The shelter is located approximately 60m from Hoardabis River, one of the dry river tributaries of Omandumba West and about 12 feet from the bottom of the hill while the farm nearest the road is about 40m down.



Figure 6.13 Shows the location of Fackelträger site in the landscape. View from the northern side (site entry)

Various animal trails found in the vicinity of the site are found within 50m from the site. To the north of the site are the extensive grassy valleys fringing the escarpment with various outcrop intrusions, hill slopes, some semi-oval-shaped mountains with its foothills with extensive scatter of granitic boulders, some flood plain and flat valleys, while to the south east is another flat valley and a tangle of summits of hilly formations that form part of north western edges of the Erongo Mountain ranges. Accessibility to the site necessitates slight ascent on smooth granite rocks from the bottom of the hill. The shelter is sited on a large oval-shaped granite boulder at an altitude of 1235 m above the sea level and measures 12m wide, 3m deep and about 15m long and this is where most of the artworks are concentrated. The site comprises of two principal panels (OWF39a and OWF39b) located on this oval shaped boulder but giving different aspects and morphology.

Historically, the site was firstly documented by *Abbé* Breuil and his colleagues Ernst Scherz and Mary Boyle who focused mainly on rock paintings, resulting in their paperback publication titled “Anibib and Omandumba and other Erongo sites” of 1960. A systematic documentation of the site was carried out later by Dr. E.R. Scherz, (SCHERZ 1986) who recorded about 146 artworks comprised of 82 human figures (predominantly of men as evidenced by the hunting equipment they carry, and few women figures), as well as 86 animal representations including antelopes (the springboks were dominant and account for 64 individuals) about 9 giraffes, 3 ostriches and 10 indeterminable animal figures. Archaeologically, the site was excavated by Dr. W. E. Wendt in 1972 (WENDT 1972:10) as part of the “German Research Foundation’ (Deutsche Forschungsgemeinschaft, DFG project “Petroglyphs in South-western Africa” from 1968 whose work research objective was to establish a chronological position and archaeological context of rock art in the Erongo Mountains. Wendt’s work in Erongo was later published by professor Jürgen Richter in a 1991 book entitled “ Studien zur Urgeschichte Namibia’s Afrika Praehistorica 3, Köln 1991”.

Today, the site’s overall rock art repertoire contain an excess of 202 total, recorded rock painting figures at both panels with the overwhelming majority displaying representations of animal figures that account for 90 and 76 human figures (both men and women) engaged in social activities, while the indeterminate category account for 36 figures and comprises of some animals and few human figures showing only few body parts because they are faded, some dots, ovals, circles resembling shoe soles in small dotted lines, lineal and objects with a visual resemblance of grass or torches.

d.1.1.Panel Id: OWF39a

The first panel OWF39a stands at 1235m, oriented 65° NE and measures about 7m long and 5m high. It serves as the face of this large boulder that forms the immediate focus of attention upon entering the shelter (Fig. 6.14). It is a light yellow coarse-grained boulder covered with brown crust. Underneath the boulder is a small liveable hollow/shelter with an opening measuring 4.1m long 3m high making it hospitable for human occupation.



Figure 6.14 Panoramic view of Panel OWF39a at Fackelträger site. View from the northern side (site entry) of the site. Picture taken in dry season (November 2016).

The panel contains a total of 34 rock-painting figures located mostly on the right side of the panel while occupying the middle part of the panel immediately above the entrance of the shelter facing 92°East. Of the 34 painted monochrome figures, 26 of these are painted in red while a total 8 have been painted in brown pigments (Fig 6.15).

However, only 27 out of 34 artworks are visible, the rest of other figures are partially exfoliated while some are only showing few blobs of paint. All the artworks at this panel are visible in less than 2m ranges and comprises of 15 anthropomorphic figures depicting mainly hunters in full bodies bearing their hunting weapons such as bows and arrows. These anthropomorphic representations are depicted in groups and are following herds of some animals. Such a scene reflects a life style of hunters in the hunter-gatherers society. Furthermore, human figures measure between 20cmx5cm, 20cmx4cm and 10cmx10.3cm respectively. About 11 recognizable figures have overlapped over each other, as shown in (Fig. 6.15).

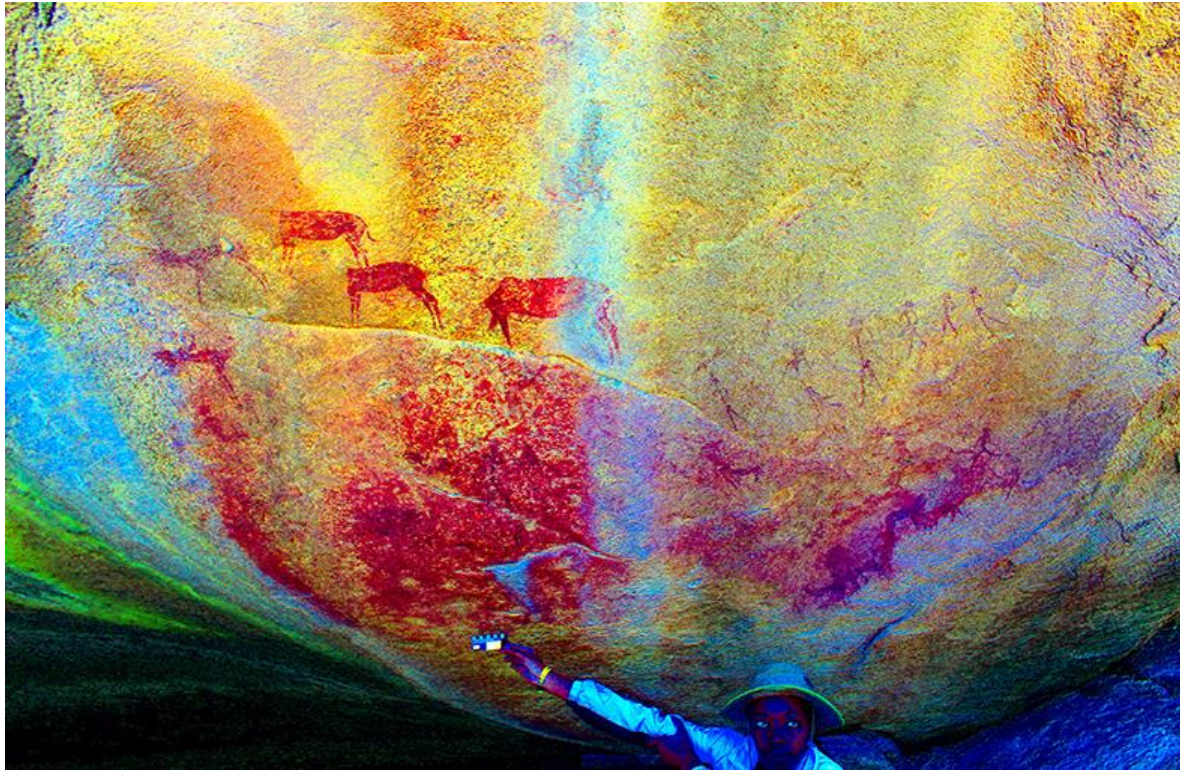


Figure 6.15 Above shows a DStretch image of the panel. The bottom image shows reconstructed image of Panel OWF39a. On the left is the original figure while on the right image shows the location of figures on the panel. Below image is a traced panel with only visible figures at the panel. All figures at 10cm scale. The earlier (phase 1) figures are painted in red, brown figures are succeeding red figures (2nd phase) while only one figure in orange appear to be in the (3rd phase) as it has been superimposed on two figures. Stylistically, figures in 1st and 2nd phase share the same morphology but the springbok figure in the 3rd layer has its one ear outlined.

Apart from human figures, a total of 12 zoomorphic figures were recorded at the panel. Among the recorded zoomorphs are 4 headless oryxes measuring between 20cmx20cm to 7cmx8cm painted in red monochrome, 6 springboks and 2 indeterminate animal figures. Furthermore, the site contains extensive scatters of surface artefacts such as traces of burnt charcoal, brownish-grey hearths and soft ashy sediments, stone tools from basalt rocks and clear quartz (large cores and small flakes), pieces of pottery, ostrich eggshells fragments, some animal bones (probably recent) and a pestle without pigment stains. Such extensive surface collections and past excavation at the shelter indicated the extensive use of the site for habitation which fits in with other neighbouring sites from Leopard Cave, Etemba, Great Elephant shelter, Phillip Cave and, generally, the Erongo archaeological context. Some rock paintings at the panel shelter appear to be generally in a good condition while those located slightly below the panel faded and washed away to the point that even if they are detected by D-Stretch application, they could not be read. However, anthropic activities affecting the site and artwork are in a form of soil trampling, possible touching of artworks. Natural factors affecting the state artwork include extreme sun exposure, run-offs from rains and dassies' excreta as observed on the panel.

d.1.2.Panel Id: OWF39b

Located immediately at the rear from the previous panel is the second panel OWF39b facing 135° south east of the same boulder (Fig. 6.16). The panel stands at 1236 m above sea level. Accessibility to the panel is through a narrow passage flanked by a panel and an opposite boulder nearly leaning on the boulder that contains artwork. The panel contains similar geological features as observed at the panel OWF39a. This prominent panel measures 4.0m long and 2.03m high. Small and medium boulders that limit the movements of people characterize the panel's surface. Towards south, beneath the panel is large opening with strong evidence of human occupation, in form of sediments.



Figure 6.16 The image on the left show the shape of Panel OWF39b while the image at the bottom is the panoramic view of the panel.

The artworks at the panel are visible from a distance of less than 15m. The panel proves to be challenging to document because its topography is limited at the bottom by a cleft of the rock in front of the boulder. Here, a total number 169 of rock painting figures that spreads horizontally on the boulder have been recorded. They occupy the bottom and middle of the panel. The figures are oriented towards 250° SW and the painted surface stretches between 8m horizontally and 3m vertically from the bottom to where the artwork ends on top. All the artworks are painted in monochrome with few outlined while some of them are superimposed on each other but in the same color. About 120 figures are in painted red (mostly human and many antelopes) while 49 have been painted in brown colour – mainly giraffes, a tree and some other animal most of which have overlapped red figures.

Furthermore, of the 169 painted figures recorded at the panel, about 77 of these are anthropomorphs that are spread across the panel, found in different scenes and engaged in various activities. For instance, men, mostly hunters who account for 63 are depicted bearing hunting weapons in a form of bow, arrows, quivers and sticks and are shown following herds

of, for instance, springboks and ostriches while others are moving toward the south where all figures are facing. Women figures make up 14 in the repertoire. They are found at the top of the painted figures forming eponymous scene (Fig. 6.17).

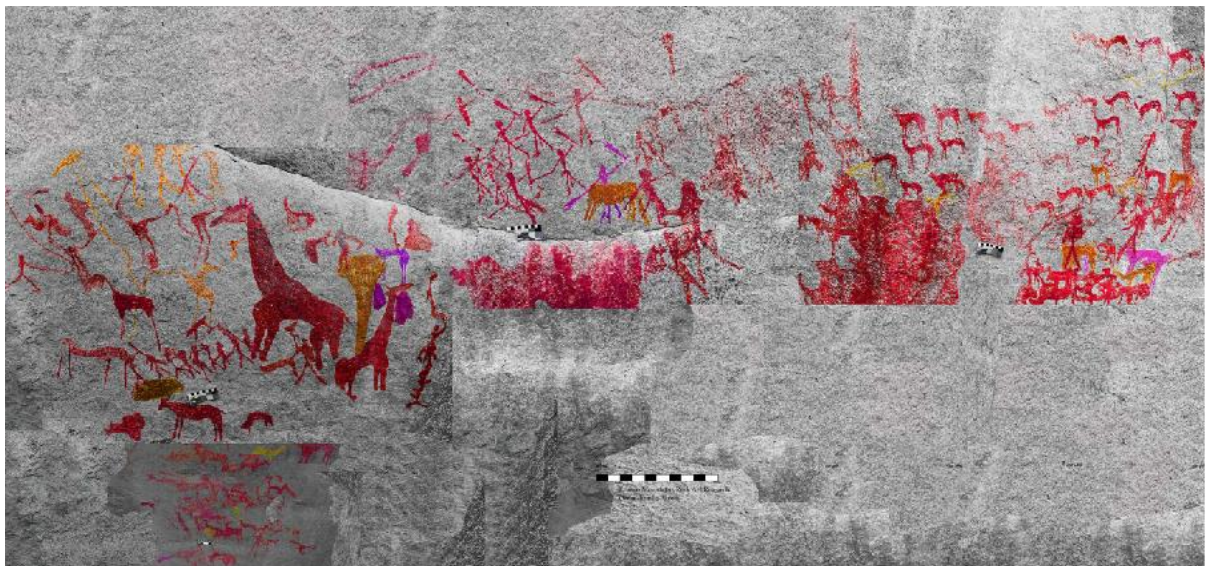


Figure 6.17 Top image shows the DStretched photo of the entire panel. The bottom image presents a reconstructed Panel OWF39b. The earlier (phase 1) figures are painted in purple color which have been succeeded by orange figures (2nd phase) while all red figures are appearing in (3rd phase) as they have been superimposed all figures. All figures at 10cm scale.

They are shown standing and holding what Scherz has identified as torchers while information from the local San people from the Omandumba Living Museum suggests that

they are likely harvesting grass for the construction of thatched rooms, or for making bags and mats, an activity that is mostly performed by women. Others are depicted pregnant, i.e. a pregnant woman standing slightly left on top of the *Aloe Dichotoma* tree on the panel while others are found at the bottom of the panel following a headless springbok.

Zoomorphs depictions at this panel account for 80 figures visible only from 15 m where a variety of animal figures such as a fully painted jackal in front of a large giraffe, about 9 giraffes that have been painted in three different styles: some are naturalistically depicted, some have their headlines and backlines only shown while the last one has its headline and neckline only depicted.

One of the giraffe is following a herd of springbok moving to towards left with its head and back shown only, two extremely large giraffe measuring 56cmx44cm standing majestically with its back next to a tree and another smaller giraffe slightly beneath the same tree measuring 40cmx7cm and another one found with its lower back superimposed at the lower bottom of “Aloe Dichotoma” tree while other three giraffes are found below the panel flanked by human figures, 1 wildebeest, about 4 outlined ostriches with slender legs with their necks and head clearly shown in front of the large giraffes and some fully depicted springboks which account for 60 in the repertoire who are shown moving calmly from the right of the panel to the left followed by human figures with a whip. A landscape feature in form of a phytomorphic figure depicting what appears to be an *Aloe Dichotoma* measuring 10.5cm long and 3.5cm width part of this panel record. A large giraffe has overlapped its lower part; hence, I could not establish whether it had roots or not. The figure is flanked by two large giraffes below facing opposite directions, one human figure (a pregnant woman) found at the top left and a headless springbok found at top right all facing left. The figure is of the dominant visual features at the panel in addition to two massive giraffes. Indeterminate figures accounting for 12 figures in the form of a faded and worn-out animal and human figures showing only few body parts, some fully filled dots, ovals, circles resembling shoes soles in small dotted lines, lineal and objects with visual resemblance of grass or torches. These figures are equally found across the panel and among scenes of identifiable features.

d.2.Associated Archaeology

Dr. W. E. Wendt excavated the site in 1972 (WENDT 1972:10) where fine, soft and ashy archaeological deposit in a form of spoils of heaps and sieves are still visible today. Wendt’s research objectives were to establish a chronological position and archaeological context of

rock art generally in the Erongo Mountains. Here, was created in the B-section where an excavation trench of size 22 m² to a maximum of 165cm in depth was laid out immediately below the lower rock paintings (Fig. 3.7), which must have been used as a living space as indicated even today by the presence of surface collections in form of pieces of haematite stones, charcoal, lithic artefacts, disturbed grey soft ashy sediments at the site (Fig. 6.18). The site's high quantity of paintings with strong emphasis on women, its location in the landscape and direct access to immediate surrounding with good visibility of the landscape suggests that the sites was likely used as an aggregate camp.



Figure 6.18 Present some of the surface artefacts found in the shelter. In this photo are some stone tools, bones remains , pottery fragments and charcoal.

e.OWF42

SITE ID: OWF42
Local name: Leopard Cave
GPS Coordinates: E15° 33 17.67 /S21° 34 22

e.1.Site Description

Standing at an elevation of 1256m is Site and it's accessed by driving on the well-established farm road from nearby the Omandumba West farmstead or nearby rock art sites such as the Seal Shelter. The site commands a great view in the landscape, it is visible from more than 30m distances from its surrounding area even though small thorny bushes and trees flanked it. The site lies at the bottom of an imposing cretaceous granite massif overlooking the southernmost hill complex of the Erongo Mountains that marks the limit of Omandumba West Farm (Fig. 6.19).



Figure 6.19 Present site OWF42/Leopard Cave. View from the western side of the site.

This shallow cave shelter is found in a coarse-grained spheroidal red granite boulder with predominant brown protective crust that has been flaked off as a result of large-scale exfoliation revealing a smooth hard reddish color beneath its surface despite the fact that granite is comparatively resistant to weathering. The site has another immediate site Mathieu Boulder, which is found in 1-minute walk east of this site. Today, various animals are seen in the vicinity of the site and its immediate surroundings. These include but are not limited to

birds, tortoises, rodents, rock dassies, baboons, some small antelopes as well as the leopard that was occasionally seen in the site, from which the site got its name.



Figure 6.20 Left image shows the interior of Leopard Cave open-air Cave Shelter. The excavation area is shown in the middle. The bottom image indicates the location of figures (pointed arrow).

The boulder appears to be stable on the ground and is flanked by other detached boulders of various shapes and sizes forming picturesque pedestals of the imposing massif behind it. Like most of the sites in the Omandumba farms, this site has also direct access to the immediate terrains and other natural infrastructures (resources), i.e., the nearest water point, a non-perennial river (500m), an excellent view of the surrounding landscape and animals that roam in it, as well as access to raw materials (basalt deposits) for stone tool production as the site configurations and settings was suitable for human habitation. The site is located at strategic location that requires knowledge of this area in a form of trails systems that navigate through difficult terrains, the knowledge of game trails, hunting strategies, procurement of wild food around this area and knowing the location of water sources. This rock shelter is slightly larger compared to other cave shelters in the Omandumba farms (Fig.620). It is with a dimension of about 50m² 7 meters side of which about half of it is covered by granite boulders.



Figure 6.21 Shows the location of the artworks on the panel. All original imaged are painted in red monochrome No superimpositions of elements have been recorded at the panel. Therefore, all the figures falls under the same phase, which is the earlier (Phase 1).

It has a concave entrance forming an overhang with a diameter of 7m while it is oriented at 180°S. Some part of its ceiling is covered with a shiny, thin coating layer of brown to dark marks probably caused by fire while edges of the overhang have some white patches caused by water seepages. It is evident that rainwater flows over in the ceiling creating some wash zone flows weathering the cave shelter even more obscuring the site content. Besides being archaeologically disturbed today (2016), the cave floor contains soft and fine grey to ashy deposits and traces of small animal bones probably brought in by predators. Paintings spread on 2.6m long surface and 7m high overhang. This key archaeological site in Omandumba West host's approximately 16 rock paintings concentrated west of the cave shelter at the bottom (Fig. 6.21)

They are visible only from 1m distances as they mostly very small and in very poor state of conservation. This resulted from various contributing factors including anthropogenic actions - extreme dust from past and present site's excavations as well as by animals that shelter in the cave. This, in combination with the natural factors such as run-offs has ensured that paintings remained obscured and difficult to identify even on DStretch application. The fact that the paintings are painted in red pigment – one of the poorly preserved colour in the corpus meant that their current state of conservation is inevitably poor. Today, few blobs and traces of pigments are visible at some places of wall that proved that there were once a number of paintings but are now completely faded. Those that are recognisable comprised of game, human figures and some unidentified figures most of which have been monochromically – fully painted in red. No elements of superimposition have been recorded yet. However, among the 12-recorded figures recorded, 4 are anthropomorphs representations, whose identities were difficult to establish. Zoomorphs figures account for 4 recognizable figures. They include, a headless giraffe, an unidentified antelope, a duiker buck and a fully painted giraffe head. The category of indeterminate figures comprised of 4 elements adjacent to other figures, whose identity could not be determined as they do not containing any diagnostic features.

e.2. Associated Archaeology

The extensive scientific investigation of the site from 2007 and subsequently periodically until 2016 led to diverse stratigraphic sequences containing a succession of human occupation layers from Later Stone Age site assemblages. Among the artefacts recovered is a wide range of stone and bone tools and ornamental elements, ceramics in combination with

highly fragmented bones of wild animals. Amid fauna corpus, are caprice (sheep or goat) bones and teeth of the oldest remains of domestic animals in the entire southern African region, dated about 2300 years ago (Pleurdeau et al., 2012). Other notable discovery at the sites were the fragmented human bones associated with burial practices "cremation" dating from about 6000 years BP (Pleurdeau 2014). These elements document burial practices of pre-pastoralists in the region, which are still largely unknown. Perhaps the most important finds directly related to the production of rock paintings are the *in situ* pigmented grinding stone and pestles artefacts (see Fig. 4.3.8 or Fig. .2.2.10: and Fig. 5.2.2.11) in Layer (P7) in association of materials dating between 3200 and 3500 BP (PLEURDEAU 2016). Such findings are currently (at a time of writing this thesis) under various analysis including pigment analysis as well as possible dating should they contain organic materials. In addition to the recovered *in situ* pigmented artefacts, the clearance of excavation of the square P7 in 2015 has revealed the presence of a deposit of pigment similar to those present to the top of the upper limit of the sediment before the excavation (see Fig. 5.14). These are also undergoing scientific study.

The sites physical morphology (large cave shelter with a lot of space) as well as its location in the landscape (with useful natural infrastructure nearby e.g. basalt rocks for - stone tools production, rivers as well as direct access to immediate surrounding with good visibility of the landscape made it ideal for long –term stay site.

f.OWF46

SITE ID: OWF46
Local name: Priests Shelter
Number of panels: 2
GPS Coordinates: E15° 32 48.66/S21° 34 45.44

f.1.Site Description

Rising at 1301m above other plains is site OWF9, one of the southernmost sites locally known as the Priest shelter. The site is situated on a last prominent topographical and geographical rocky ridge located on the northern granitic hill of the Erongo Mountains marking the limit of Omandumba West farm on the path leading to the Posten Korichas ridge and the southern most hills of Omandumba farmstead (Fig. 6.22) below.



Figure 6.22 Shows the panoramic view of the Priest Shelter (red arrow). The boulder hosting the site leans on the Ostrich shelter boulder.

The site overlooks the northern sites of Leopard Cave shelter located at the bottom of a cretaceous granite massif to the north, as well as its eastern site of OWF45, which is found on a relatively large round boulder on a small outcrop. Its nearest water points are approximately 10m in the form of a deep large pool northeast of the site and 300m from the river south of the site. The site's landscape is surrounded by a series of relatively tightly enclosed flat plateau with various boulders where the other two sites adjacent to each other. Access to the site is challenging requiring an odious climbing on steep hills as the site is located on top of a plateau.

f.1.1.Panel Id: OWF46a also the Rhino Panel

The Rhino Panel is the first panel reached when entering the sites. It stands at 1300m elevations. Its painted surface has a dimension of about 3.4m long and 2.5m high and it is oriented towards 102° E. The panel is unfortunately exposed to the sun throughout the day and this position made recording very challenging. Since its painted surface is equally

yellowish, most of the artworks, especially those painted in faded red could barely be seen (Fig.6.23). Those that were recorded are visible from a range of less than 3m.



Figure 6.23 Shows the panoramic view of the Priest Shelter. The extension of panel OWF46a towards north (right) of the panel

The panel's repertoire contains 30 figures spread around a 1.2m horizontally layer of the sloping boulder. Most of the figures are monochromically painted in red with few painted in deep red, while a few have been outlined. Here, we have also recorded few elements that have been superimposed on other elements. Anthropomorphic figures dominate and account for 21 artwork. They are, however, in a poor state of conservation with many faded while others are only visible through the DStretch application. They comprise mainly of 19 hunter distinguished mostly by their physical morphology and equipments they carry. They all appear to be in a migration scene, and are carrying some large and many unidentified objects facing left, south of the panel where other panels are found. While only 2 female figures were recorded in the human repertoire.

Zoomorphs figures account for 3 figures at the panel depicting 2 rhinoceros have been superimposed over with numerous faded human figures as well as 1 unidentified small antelope. Both rhino depictions are in brown pigment. They are well detailed and seldom have their magnificent U-shaped horns, prominent ears, tails tips, while their bodies are well proportioned and naturalistic and a clear duplication of the living ones. They have been produced in two techniques of execution, mainly partially outline and fully painted. Furthermore, they are both characterized by their pronounced hump, and they appear to be walking and steadily with their heads up as if they have been alarmed and both have concave backs. Their front horns are much larger and longer than the inner horns and have been represented and executed in two different styles: the larger and entirely outlined one is measuring 22.5cmx10cm in size, located in front of the fully painted one.

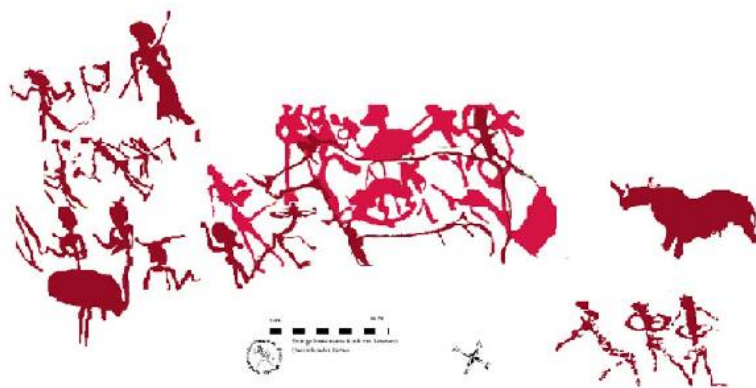


Figure 6.24 The top image shows a DStretched image of the panel. The bottom image shows reconstructed image of Panel OWF46a. Top left is the original image of the painted panel while the image on the right shows the locations of traced figures on the panel. Below image is a traced panel.

It is fully outlined in brown pigment and presented with a bulky body and short legs while its ears and front legs have been outlined first and then filled in with paint. It is depicted walking following a large group of people with several other weakly painted human figures in red beneath it - probably (older human figures) where the animal has been superimposed on. Moreover, only two of its legs (frontal and hind) are shown, while its nose and eyes have been omitted possibly because the figures have been painted in a perspective view. A second rhino is located immediately behind the first one, measuring 16cmx8cm in size. The figure has been fully painted, outlined first and then its body was filled in with brown paint. It is slightly smaller than the first one, but with a very pronounced concaved back, prominent shoulder hump and a very well defined stomach lining (Fig.6.24). This rhino appear to be very alarmed and depicted walking steadily, following the one ahead of it with its upper body elevated. Its two frontal thick legs have also been shown while only one of its hind legs is shown. Although they have been well executed. I could not establish their identities of the rhino - black or white rhinos because their physical morphology is quite similar. However, it is possible that, the use of two painting techniques by the painter was intended to distinguish between a white and black rhino – no evidence for this.

Even though the presence of two different painted rhinos on the same panel is quite unusual in the rock painting of Namibia, their presence at the site was not particularly surprising given the fact that the rhinoceros plays a role of the crucial cultural significance in the hunter-gatherer rock art tradition of southern Africa. It is regarded as one of the rainmaking animals (OUZMAN 1996; HOLLMANN & LEWIS-WILLIAMS 2006). Besides, the site occupies one of the powerful position in landscape, therefore, its position in the landscape, the location of other rock art sites in the same locality, the type of artworks found, as well as other associated archaeology, suggests that the site's function might have probably been a ceremonial place. Furthermore, being the only animal species presented at the panel, its presence here must have also suggested it might have thrived well and in abundance especially in this locality as it is well vegetated with the presence of water points. Today, they are still roaming in this area, although under difference contexts.

The last category is that of the indeterminate figures 6. As had been observed at previous sites, figures in this group at this panel include some forms like circles and those with basic anatomical features such as legs, body that form part of the zoomorphic group but lack

sufficient vital diagnostic features while others are simply too faded to be identified completely.

f.1.2. Panel Id: OWF46b also the “Priests Shelter”

Located immediately real of the previous panel boulder is the Priests Shelter, also OWF46b, which stands at an elevation of 1301m. The “Priests shelter” (Fig. 6.25) is oriented towards 180°S and is facing the well know “Strauße” or the Ostrich shelter. The Panel got its name from three prominent human figures wearing robes with a visual resemblance of dresses worn today by priests.

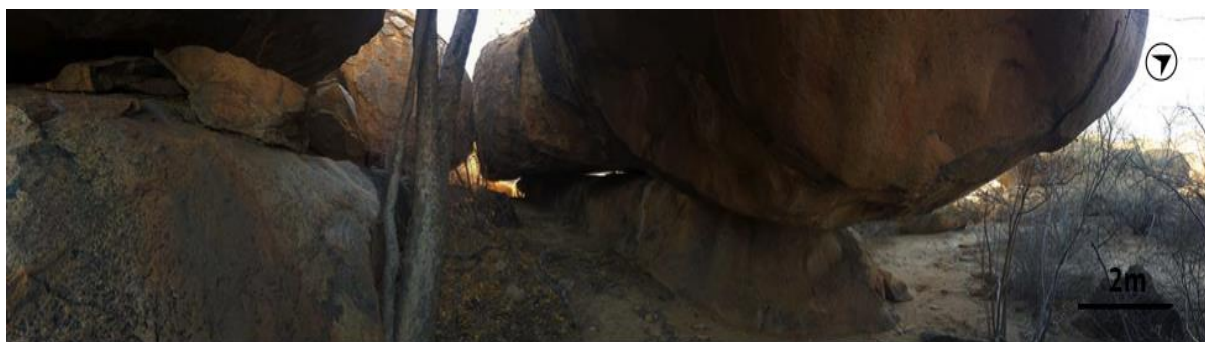


Figure 6.25 Shows the panoramic view of the Priest Shelter. The extension of panel OWF46a towards north (right) of the panel.

The shelter is formed as a result of three large boulders leaning against each other and meeting at the top to create a rather narrow small shelter capable of sheltering few people and it is in front is some vegetation. However, there were very few recorded surface collections in the form of lithic artefacts made from basalt rocks similar to the Late Stone Age assemblages found in most of the rock art sites, but there is no indication that the site was occupied. The painted panel measures 2m long and 1.2m high while the artworks are facing west following the boulder’s movement. However, the panel shape is convex bulging outward making it difficult to photograph the entire panel with all its figures.

The space between the boulders and the roof of the boulders is constrained and confined, a condition that made it difficult to photograph and document the site; it was an arduous procedure as the opposite boulder is equally bulging from behind limiting the movements. There are two indeterminate figures that have been overlapped by human figures and a stick (a cane – being hold by a human figure) recorded at the panel. These have been painted originally in faded red and therefore in the 1st phase.

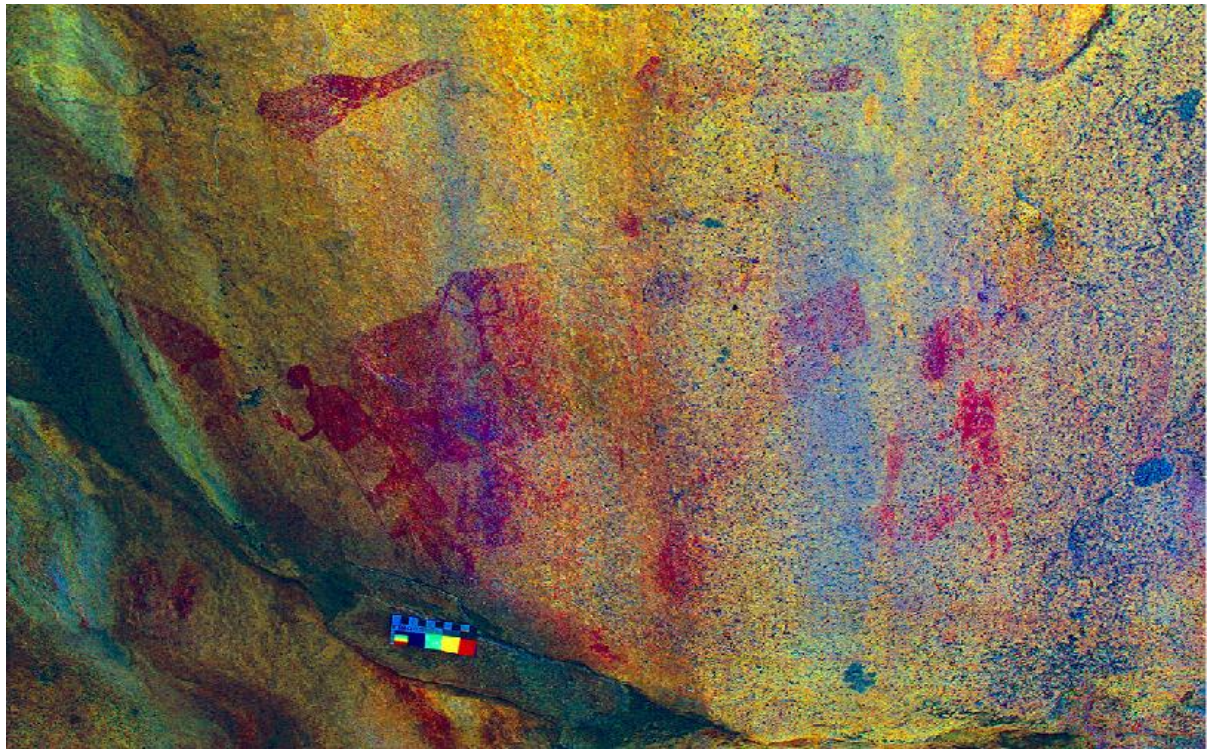


Figure 6.26 Top image shows a DStretched image of the Panel. The bottom image shows reconstructed image of Panel OWF46b. Top left is the original image of the painted panel. The figure in the middle shows a DStretched image of the panel while the image on the right shows the locations of traced figures on the panel. Below image is a traced panel.

The movement of the artworks at both panels follows the natural morphology of the rock surface. Hence, they are seen interacting with the natural surface of the rock. In total, the panel repertoire registered only 17 figures (Fig. 6.26), visible from 2m ranges. All figures can only be seen while standing. They have all been fully painted in red monochrome, with one (human) outlined and partially in-filled with paint. Almost all the figures at the panel, especially the human figures, are sloping down into a crevice which they are walking towards, giving an impression that they are crossing either a natural barrier in a terrain or are of a supernatural character such as a crossing point into the spirit world, but other possible explanations could be considered. Anthropomorphic figures account for 6 figures. They are well preserved owing to absence of sunlight throughout the day as well as their position they occupy on the pane.

Among anthropomorphs are three human (also priests) figures measuring between 41cmx9cm and 14cmx9cm in sizes. The most prominent human figure at the panel and one of the principal human figures in our study areas is that of the well-known "Priest" measuring 41cmx09cm – painted in red monochrome and located slightly at the bottom of other figures while facing west. This human figure is well detailed and even more naturalistic than most of other human representations in the study. It is depicted bearing an object – seemingly a torch or calabash like object on the right hand with other hand is not clearly visible. The larger human representations stand out more clearly because of their size and their state of conservation. The other two "priests" measures between 32cmx8cm and 28cmx6cm in sizes and are equally well detailed, and wearing some kind of long dresses similar to modern day priest clothes. The first priest figure (top left) is shown with its head down and is depicted without legs while the last one (right bottom) is shown holding what is likely to be a cane – walking stick, which is being reached by another human figure in front. The last two human figures are juxtapositioned right next to the prominent priest figure while superimposed on a large, stretched unidentified figure. They are likely to be men, and one of them is shown bearing a bow while the other with his arm starched straight.

Verena Börner (BÖRNER 2013) who studied the site's artworks in relation to shamanistic perspective found the artworks rather challenging to interpret. She, however, gave a general description of the site morphology corresponding to our initial observations of the site and its surroundings, the secluded position it occupies in the landscape, the type of artworks and the virtual absence of other surface collection like ceramic artefacts and sediment with the

exception of some few stone tools and two stone structures (that look like possible graves), which indicate that the site was indeed not of a living character rather than a possible ceremonial. Börner is of the opinion that the presence of these three possible figures, including the prominent ‘priest’ figure must be significant, not only to the painter, but also because its powerful chosen location. Clothed representations of human figures such as these found at this site are undoubtedly some of the uncommon figures in of Namibian rock art. The site repertoire also contains 10 indeterminate figures most of are placed adjacent to human figures. Among them is a large stretched sheet like object superimposed by human figures. The other indeterminate figures are according to the local San men - chunks of meat, which could represent haunches of large antelopes or giraffes. These types of figures are among some of the common artworks in painting figures in Omandumba and they are found almost at sites where people are found carrying objects while travelling or migrating.

f.2.Associated Archaeology

Just immediately in front of the Priests shelter and Ostrich shelter (site OWF47) are two small large stone structures giving impression that they could be graves. This assumption was supported by the fact that even the site settings, its topography and the type of artworks and its surrounding scape looked like a ceremonial place. For this reason, two test excavations in two stone structures were carried out by David Pleudeau and his French team back in 2007, but did not recover any human remains, nor did they recover any other archaeological materials. The main research question was to find out whether the structures constituted a burial ground, this is given the fact that there are few prehistoric burials in archaeological excavations in Namibia (see SANDELOWSKY 2004; MORRIS 2008).



Figure 6.27 Shows one of the stone structure clustered between two sites (OWF46 & OWF47)

g.OWF47

SITE ID: OWF47
Local name: 'Die Strauße' or Ostrich Shelter
GPS Coordinates: E15° 32 48.85/S21° 34 45.46

g.1.Site description

The Ostrich shelter is found immediately south of the previous two other panels (Priests and Rhino panels) of site OWF46 (Fig. 6.28). The site stands at 1301m. Geomorphologically, the site has been formed as a result of a massive woolsack block resting on low elongated blocks and an underlying rock structures creating a narrow gap of low ceiling of about 1m opening whose surface has been coated with a whitish natural mineral efflorescence where the artworks are mounted in the ceiling. The site is only visible from 10m distances in the landscape as its surroundings are covered with shrubs.



Figure 6.28 The top image shows the panoramic view of the Ostrich Shelter. The red arrow indicates the gap opening of the site where the artworks are mounted on the ceiling. The bottom image shows the up close image of the site. The two images were taken at two different seasons.

Due to the narrowness of the gap opening and the extreme restraining posture, accessing the artwork compels a carefully manoeuvre and crawling through that narrow opening. This opening faces 90° east while the figures are oriented to the same direction giving the impression that they are emerging from the rock similar to those scenes associated with supernatural world observed for instance at site OWF5c. The artworks at this site are some of the few artworks in our study area that are well preserved. They are only visible upon viewing them on the ceiling from less than 1m ranges. Like the previous site OWF46, Verena Börner equivalently documented this site in 2013. No elements of superimposition were recorded at the site. Here, only 6 rock-painting figures were recorded. They have all been painted in brown monochrome, with one giraffe head outlined with a single line. Almost the figures are facing the interior of the shelter with an exception of a human figure. Among the figures is 1 human figure depicted running seemingly out of the rock. BÖRNE (2013:111) described it a ‘running humanoid’ figure on top of an ostrich facing the opposite direction from the where the ostrich is facing. In addition, about 2 zoomorphs in a form of two ostriches with their necks stretched out. Zoomorphs depictions account for 3 figures, comprising of 2 fully painted ostriches and 1 outlined giraffe head. In addition, 2 indeterminate figures have also been recorded adjacent to the animal figures.

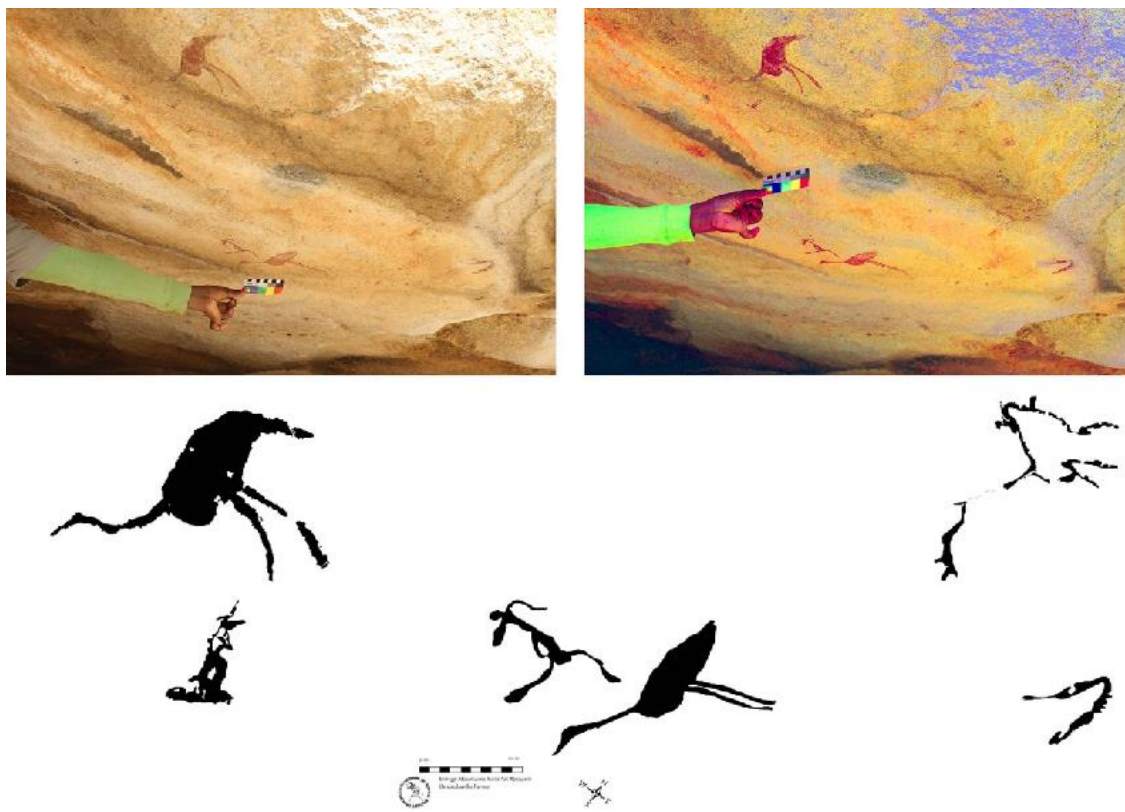


Figure 6.29 Shows reconstructed image of Panel OWF47. Top left is the original image of the panel. The image to the right shows a DStretched image of the panel while the bottom image is a traced panel.

The site's artwork have been painted in the ceiling of a rock crevice, even more rarely placed in a position that is inaccessible, not easily visible, in a surrounding that similarly contains the other unusual site (the Priests shelter) and equally unusual stone structures accumulates clustered in front of two sites. It is likely that the site's content was for private view. Verena Börner (BÖRNER 2013:111) who documented the site and its content interpreted the artworks and the site as sanctuary of ritual space where ceremonial activities might have been performed. She further stressed that their anthropic figures, as well as its unusual location of the paintings, put them in a context, which must be outside the profane area. The fact that the sites in these localities are isolated from the usual natural infrastructure, with unusual depictions supports the hypothesis that these sites were likely to be hermitage places.

g.2.Associated Archaeology:

No surface archaeological collection.

h.OWF50

SITE ID: OWF50
Local Name: Tuba Rock
GPS Coordinates: E15° 31 55.25/S21° 34 50.019

h.1.Site Description

Located on one of a higher elevation of 1310m is Site OWF50 locally known as Tuba Rock. It lies at the foot of a southern granite hill slope with its top covered extensively by compacted and loose boulders (Fig. 6.30 & 6.31). The site overlooks the ravine and valleys and its adjacent to a cluster of additional five sites (OWF51-OWF55). The boulder hosting the artworks must have broken from the hilltop coming to rest at the bottom of the slope where a fair extensive scatters of many boulders forms a picturesque pedestal of boulders with various sizes. The site is oriented toward 315° NW with an excellent view of the flat plains overlooking a large open valley.



Figure 6.30 The top image shows the panoramic view of the site OWF50. The red arrow indicates the location of the site. The bottom image shows the up close image of the site. The two images were taken at two different seasons

It is a yellowish smooth boulder resting on the ground showing evidence of weathering where a dark crust has been peeled off exposing a hard lighter color beneath it. Access to the sites is by driving in the valleys in the well-established farm road from Omandumba Farmstead, the direction of the southern-most campsites in Omandumba West farm. The site is then reached by walking directly to the boulder because it's adjacent to the road. The panel surface containing the artwork measures 3m high and 3.5m long.

It hosts about 46 rock painting figures painted mainly in brown and few in red pigment. Elements of superimposition of figure at this panel are eminent. However, it is quite difficult to establish which of the superimposed figures overlap or precedes the other especially among figures painted in the same colour with the same paint consistency. The artworks at this panel are presented in a generalized horizontal plane. The majority are placed at the extreme bottom of the panel while few occupies the middle of panel. Two clusters of figures exist, each with a concentrated number of artworks (Fig. 6.33 and Fig. 6.34). The first cluster contains only 8 figures while majority of figures are found in the first cluster located at the extreme bottom left of the panel nearly touching the ground where their visibility is reduced to 1m ranges while the second cluster consists 8 figures located at the middle right of the panel with a noticeable giraffe seen from a distance of less than 15m ranges.



Figure 6.31 Shows the close up image of Tuba Rock/site OWF50. The two clusters are located at the extreme left (bottom – cluster 2) and towards right (cluster 1 as shown by pointed arrows).

Out of the total number of 46-recorded figures, about 22 are anthropomorphs depicting mainly hunters and few women in possession of what appear to be Tuba instruments – from

where the site got its name. They are very detailed and shown in different postures such as standing on top of most probably logs and trees with their arms stretched out while others appears to be dancing and walking on the ground. Among the 22 anthropomorphs recorded, a total 18 are men, as attested by their physical morphology with characteristics such as being taller and slender with flat bellies, small buttocks, broad shoulders and to some extent with their erect penises.

A total of 4 women figures were also identified at the panel. They are similarly shown carrying short sticks – tuba instruments in their mouth and distinguished hairstyles. Thick thighs, large buttocks and bellies defines women with some shown holding children They are mostly depicted standing, walking, dancing while some are kneeled down.

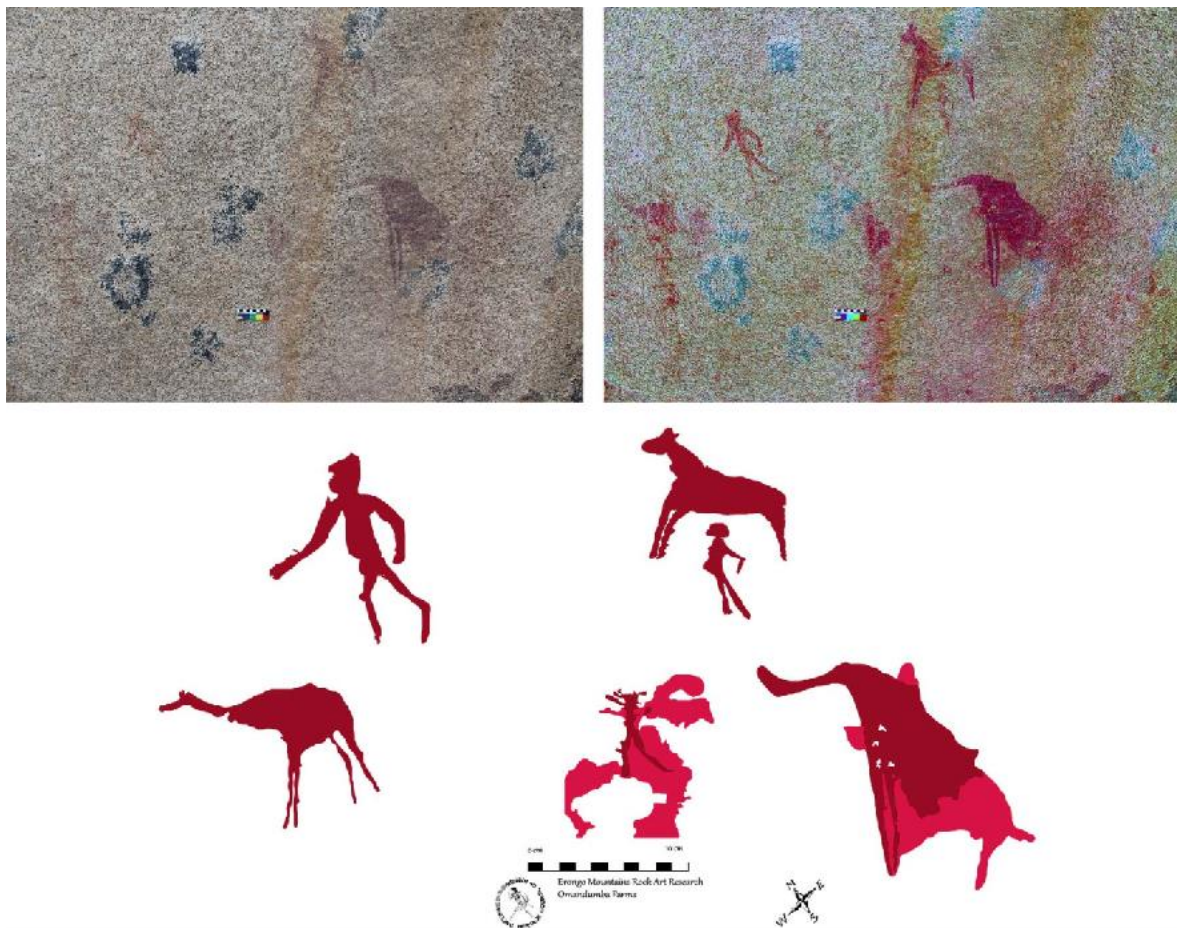


Figure 6.32 Shows reconstructed image of Panel OWF50, CLUSTER 1. Top left is the original image of the panel. The image to the right shows a DStretched image of the panel at YLD 15cm scale. The bottom image is a traced panel. Here, two phases of superimpositions are clearly shown. The 1st phase in red and the 2nd phase are in brown colour.

Animal figures are the least represented, accounting for 11 in total. Among those represented includes 5 naturalistic painted giraffes with dimensions of 16cmx12cm, 14cmx11cm, 11cmx10cm, 9cmx8cm and 9cmx7cm respectively. The larger giraffe is superimposed on

two trees emerging from its neckline and headline as well as two human figures one standing on top of its neck while the other seemingly walking on its backline. Three are fully painted in brown monochrome while the other two, are outlined in red showing only the headline, neckline and their backline. In addition, we have also recorded about 3 kudus, where two are found in the main cluster located at the bottom of the panel painted in brown flanked by trees and human figures. The first kudu measuring 12cmx3cm, located on the extreme left appears to be superimposed on treetop while the second one measuring 8cmx3cm is found in eroded brown pigments. The last recorded kudu measuring 5cmx3cm is positioned among the second cluster. There are also some landscape compositions showing trees and possibly logs.

A total of 6 tree figures measuring between 13cmx1cm, 12cmxcm, 10cmx1cm and 9cmx1cm have been recorded. About five of these are spread around at the bottom of the panel, adjacent to but do not contact each other. Several figures appear to be superimposed on them but we cannot establish which figures overlap or precede the other as they are painted with the same color. Furthermore, the trees have well-defined stalks, growing slightly wider towards the top with small parallel strokes possibly branches with a couple of human figures standing, dancing and even walking on top of them while others are not well defined. Two of the trees are found in the mix of other figures slightly above those found at extreme bottom also with human figures standing on them.



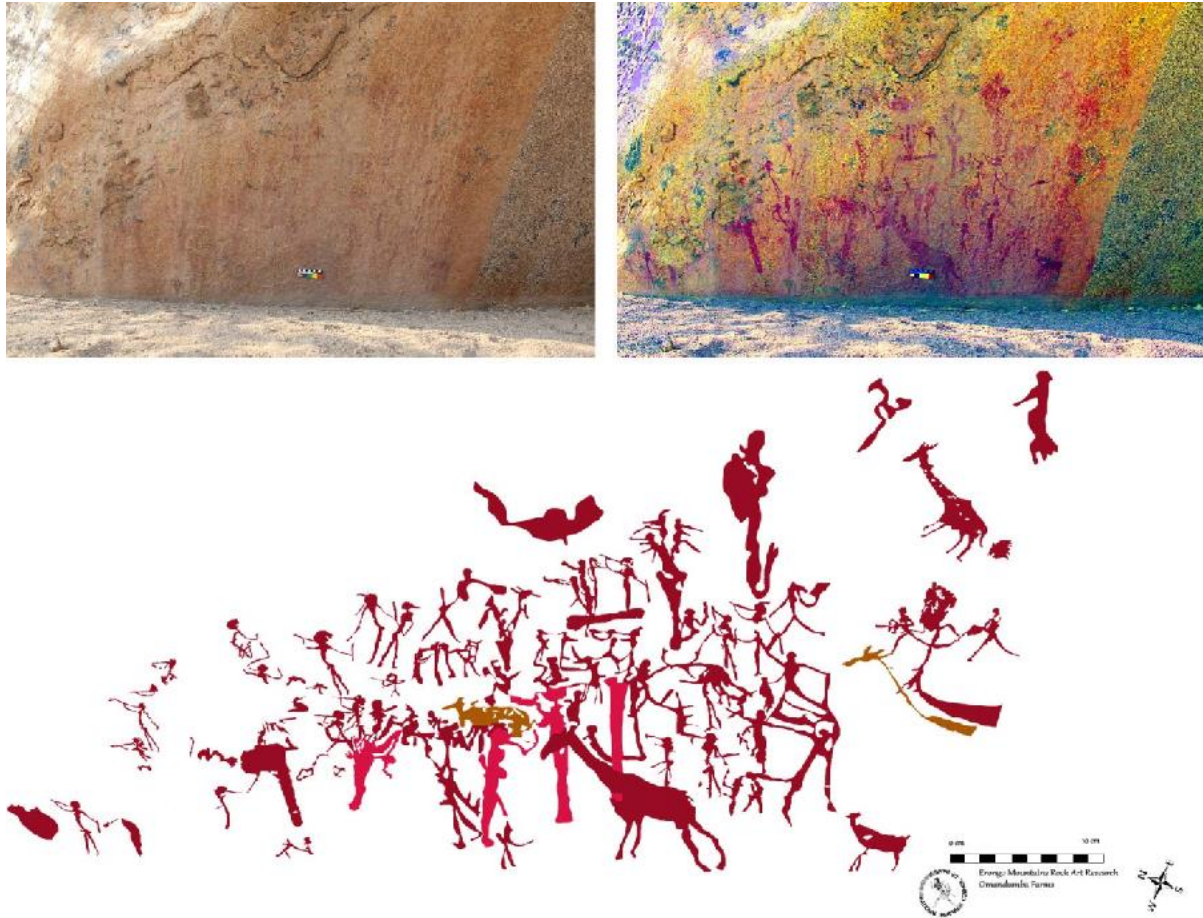


Figure 6.33 Top shows a DStretched image of the entire Panel. The bottom images shows reconstructed image of Panel OWF50, CLUSTER 2. Top left is the original image of the panel. The image to the right shows a DStretched image of the panel at LDS 15cm scale. The bottom image is a traced panel. Here, three phases of superimpositions are shown. The 1st phase in red and the 2nd phase are figures in brown colour and the 3rd phase are outlined animal figures in orange.

The category of indeterminate elements account for 10 figures at the panel. Similar to those recorded at other sites, most of the indeterminate form in poor site state of conservation. Most of them are partially exfoliated while some do not have any recognisable shapes. These artworks are juxtapositioned among other figures without contacts. Generally, most of the artworks are in well preserved, however, the panel's position on the ground made them more susceptible to both human and natural induced factors such as dust coating from road and diggings from animals.

h.2. Associated Archaeology

Only a single small fragment of pottery (Fig. 6.35) was discovered at the bottom of the panel. This particular fragment appears to be slightly burned on one side and measures about 3cmx4cm. However, it is possible that if there were other surface artefacts, they might have

been reburied due to sand accumulations beneath the panel or worse picked up by visitors –as it is one of the most visited sites in the farm. The site’s likely to function as casual ritual sites as per (LENSSSEN-ERZ 2001: 285) classification of sites. This assumption is supported by the fact that the site has significantly more paintings, its not habitable, because of low intensity of usage (with very limited surface artefacts) other than paintings. It is therefore, possible that the artworks depicted at the site may have serve as hot spot for communications.



Figure 6.34 Shows a piece of pottery found below the panel.

i.OWF52

SITE ID: OWF52
Number of panels: 2
Local names: Crown and Bee swarm Boulder
GPS Coordinates: E15° 31 54.45/S21° 34 50.1

i.1.Site Description

OWF52 is located immediately in front of site OWF51 and 12 meters - west of Tuba Rock (Fig 6.1.31). The boulder lies perpendicular to the ground and is located at a foothill of the mountain range where various boulders of different sizes rests on the ground - like the previous sites (Fig. 6.36). The site also has an immediate access to the terrains, especially from the nearby river, about (200m east).



Figure 6.35 Shows the panoramic view of the site OWF52. The red arrow indicates the location of the site.

This large granitic boulder is coarse-grained structure predominantly of pinkish and yellowish color with a hard smooth surface that appears slightly weathered with exfoliation observed on the boulder. Such weathering patterns are a general nature of granite expanding and fracturing. There is vegetation growing near the site especially far right while its topography is limited due to the presence of a small boulder in front of it. During dry season, the boulder is clearly visible from a distance of 1km but shortly after rain, the boulder is not

clearly visible as vegetation and grass cover fairly obscures its visibility (see Fig. 6.37).



Figure 6.36 Shows the location of the site at the bottom of the foothill (red arrow). The picture was taken immediately after rainy season.

The site contains two panels, namely the 'Crown Panel also OWF52a panel and Bee swarm

panel or OWF52b panel. The Crown panel is the prominent panel and serves as the first entry panel while the Bee swarm panel is located immediately behind Crown panel and accessed through a narrow passage where various paintings including that of swarms of bees are mounted. The site was initially documented by *Abbé Breuil* and his team (BREUIL 1960) and named it the “Crown Boulder” a name derived from a prominent crown like figure clearly visible at the centre of the prominent panel. While Bee swarm panel got its name from a ‘wave like fleck of bees’ structure made of small brushstrokes. The state of conservation of the artworks at both panels varies from good to poor.

i.1.1.Panel Id: OW52a:

Locally “Crown Boulder” stands at 1310m, measuring between 10.5 high and 1.9m long. The painted surface measures between 1.2m long and 0.3m high only. The panel is oriented at 90° East while the figures are facing 180° south with the artworks clustered at the bottom of the panel towards west (Fig. 6.38).

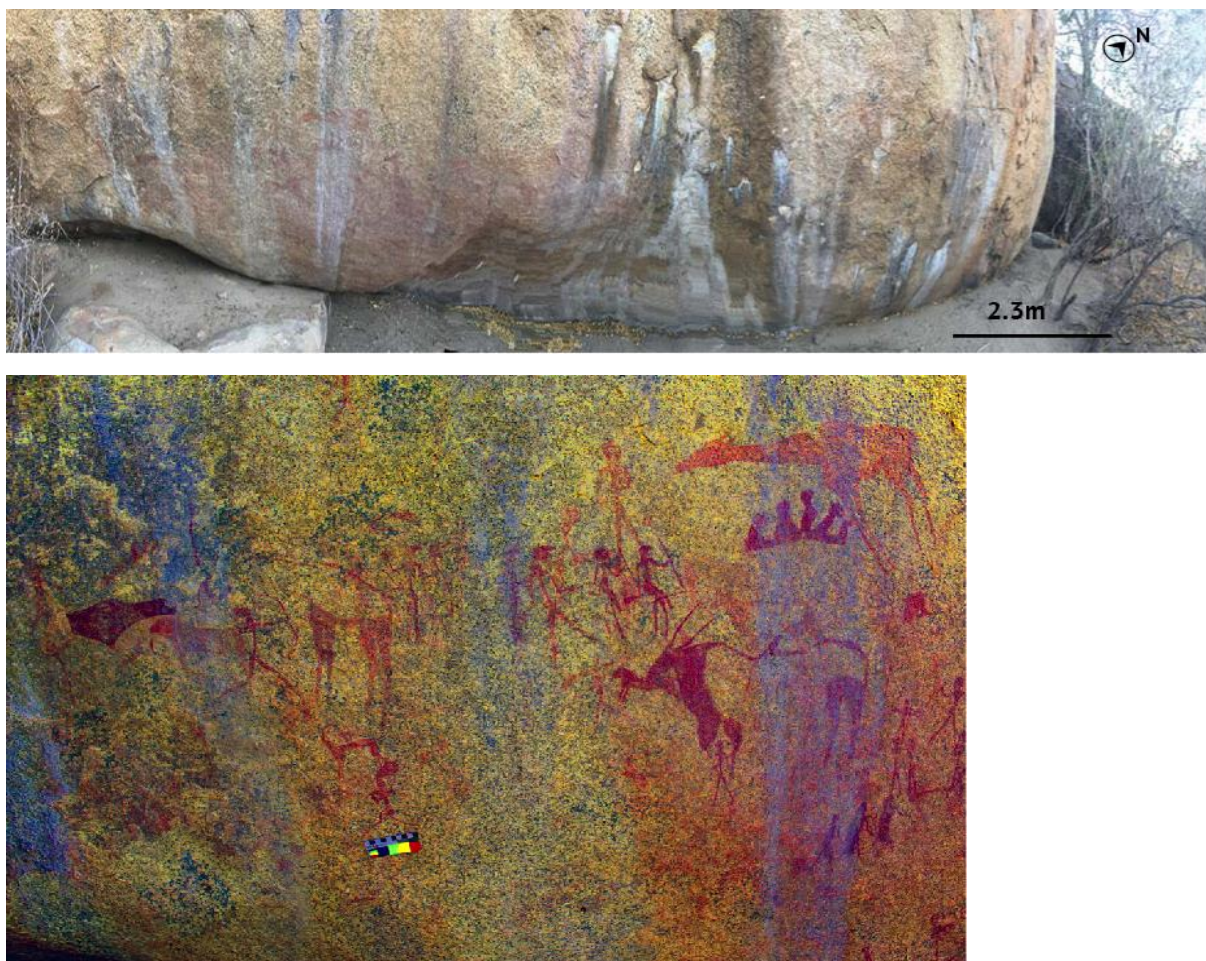


Figure 6.37 The top image shows the panoramic view of Panel OWF52a while the bottom image shows a DStretched image of the first cluster of figures at the Panel.

The artworks at this panel are visible from less than 15m ranges. Here, animal figures are predominant and are painted in full bodies in reddish pigment. Here, about 65 rock-painting figures have been recorded. These artworks spread horizontally and occupying mostly the middle and bottom of the panel. Most of the artworks are in a good state of conservation at this panel but some have been completely while some are partially washed off by rains run-offs. Superimposed figures are quite many at the panel with brown figures superimposed on red figures. Almost all the figures at this site are fully painted in monochrome (red or brown), while some animals have been outlined.

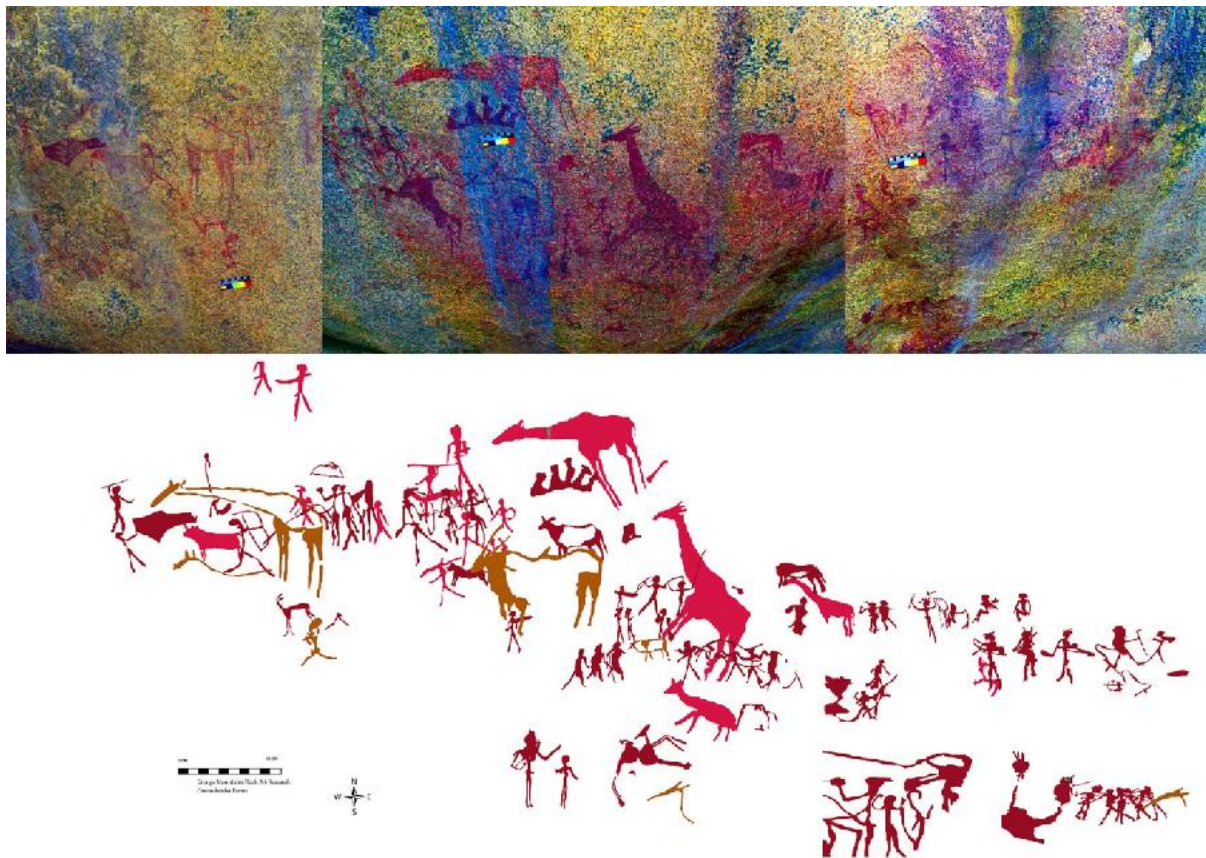


Figure 6.38 Shows reconstructed image of Panel OWF52a. The top images have been stitched together and DStretched at LDS 15cm scale. The bottom image shows the traced figures at the panel. Here, three phases of superimpositions are shown. The 1st phase in red and the 2nd phase are figures in brown colour and the 3rd phase are outlined animal figures in orange.

Anthropomorphic figures are the most dominant form of figures at this panel and accounts for 41. Most of them are so small, slender and thin measuring between 5cmx2cm, 4cmx2cm, 3cmx2cm and 2cmx1cm respectively (Fig. 6.39). About 36 of the total recorded, have been identified as male figures depicting mainly hunters. They are, portrayed in singly, pairs and groups of four or more mainly walking and carrying their usual hunting implements i.e. bow and arrows, possibly spears, sticks and quivers that are very detailed. They are shown hunting, running, carrying unidentified objects while following different herds of animals.

Furthermore, some of them have been observed seated closely behind the animals while one strange figure of a long, thin and slender man carrying unidentified object with visual resemblance of a torch is seen standing straight behind an outline figure of a buffalo probably carrying its baby inserting that particular object in its body from its tail. The remaining 5 figures have been identified as women depicted in a scenes with men walking in groups.

Zoomorphs depictions account to 13 figures comprising of 6 giraffes measuring between 57cmx40.5cm, 40.6cmx20.4cm, 21.2cmx15cm, 14cmx10cm, 12cmx9cm and 10cmx9cm. On the larger giraffe, fully painted in brown monochrome, there are three human figures superimposed on it (on its feet and beneath its neck) and one outlined probably a springbok back also at its feet. The second giraffe, fully painted in monochrome red, is located immediately above the 'Crown' figure with its neck stretched horizontally while the second giraffe has its backline and neckline outlined while its lower body and headline is fully painted in brown with few lineal figures superimposed on it. Other giraffes only have their backline and headline shown in profile while other remaining giraffes are also fully painted in brown color but one is headless.

In addition to giraffes, an outlined eland have also been recorded measuring 12cmx8cm found immediately below the crown figure in front of a giraffe and flanked by an Oryx, 2 springboks, one headless and one fully painted measuring between 10cmx6cm and 5cmx4cm, an outlined eland measuring 14cmx6cm, 1 oryx measuring 9cmx4cm, 1 kudu measuring 7cmx6cm and 1 feline possibly a leopard measuring 7cmx5cm. Apart from identified figures, abstract figures in a form of linear figures superimposed mainly on animal and human figures as well as a crown like figure measuring 18cmx6cm and accounts for 5 elements have also been recorded. The category of indeterminate contains a number of 6 figures on the panel. The artworks at this panel range from good to poor state of conservation. Overall, the boulder is susceptible to erosion as a result of rain run-offs.

i.1.2.Panel Id: OWF52b

Panel OWF4b or the Bee swarm is located immediately behind 240° southwestern side of the Crown panel on the same boulder (Fig.6.39). The panel dimension 10.3m long and 6.14m high. It is accessed through interior walls of a narrow passageway flanked by a boulder adjacent to the boulder where the artworks have been mounted.

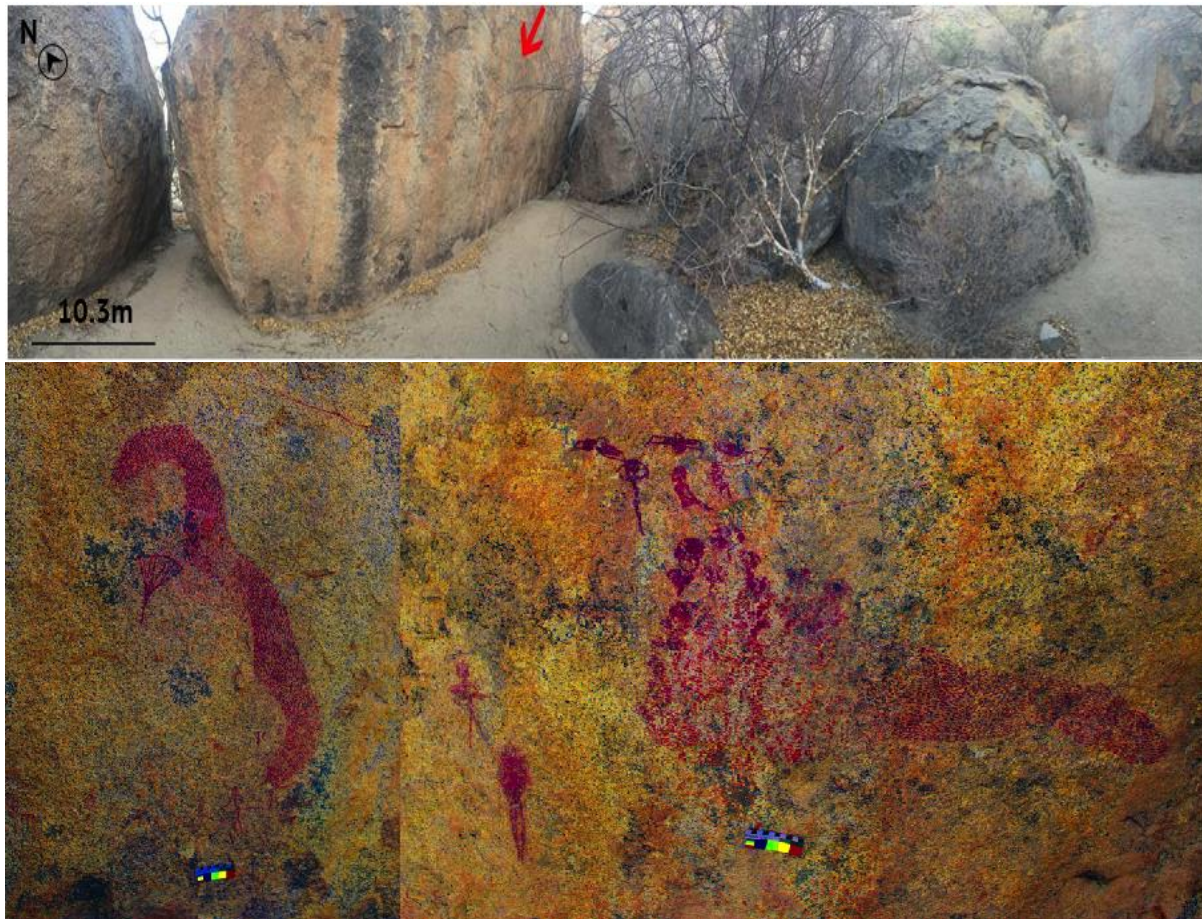


Figure 6.39 Top image is a panoramic view of Panel OWF52b while the bottom image shows the DStretched image of the first two clusters of figures at the site.

The panel stands at 1312m and comprise of three clusters of figures depicting 23 figures (Fig. 6.40). The artworks are visible greater than 15m range.

About 11 are very small anthropomorphs measuring between 3cmx2cm and 2cmx1cm depicting mainly hunters without weapons. Six of the depicted male figures are found in the first cluster and appears to be running away from the flecks of bees at the bottom of the swarms that seems to be pursuing them. The seventh running hunter is seen below the running men also facing the entrance of the panel to the left while the eighth men is seen inside the swarms immediately above a phytomorphic figure, likely to be an *Aloe Dichotoma*. While three are found at the second and third clusters following the surface of the boulder to the south where another swarm of bees flanked bees flying on top of two human figures on the wall.

Here, about 8 zoomorphic figures have been recorded. They are depicting an outlined giraffe located above the first bee swarm on the first cluster shown only with its headline and backline measuring 4cmx0.1cm. There are also dense concentrations of short paint strokes,

more or less the same in length juxtapositioned near human figures depicting what appears to be swarms of small insects, possibly flecks of bees. The flecks are arranged in a semi circular sweep.

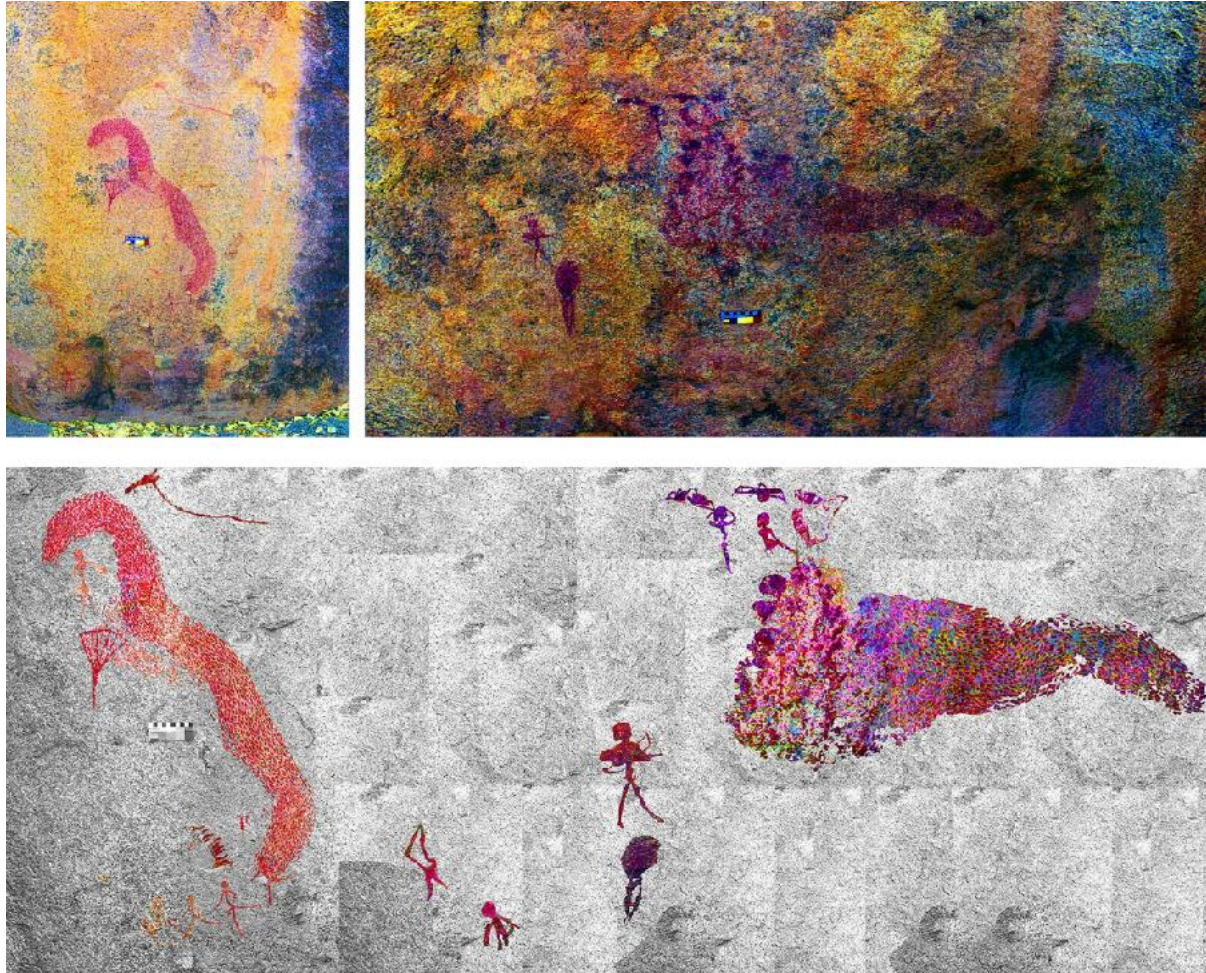


Figure 6.40 Shows reconstructed image of Panel OWF52B. Three images at the site have been stitched together. Figures have been DStretched at LDS & LRE 15cm scale.

The swarm in the first cluster is measuring 45.8cmx 8.7cm while the second one in the third cluster measuring approximately 21cmx18cm with approximately 4 bees with wings juxtapositioned immediately on top of the swarm. What was surprising at this panel is the fact that just immediately right of the panel is a honeybee colony mounted on the adjacent rock. Here, all the artworks are painted exclusively in brown monochrome. One well-executed phytamorphic figure is found in the first cluster most probably an *Aloe Dichotoma* measuring 6.5cmx0.01cm surrounded by some older faded strokes that appear to be overlapped by the strokes. The category of indeterminate comprised of 6 figures. This group of figures are poorly preserved and do not have any diagnostic features that enables their identification.

i.2. Associated Archaeology

The only surface collection found and recorded at the panel was a pottery fragment.



Figure 6.41 Shows a piece of pottery found below the panel.

j.OWF56

SITE ID: OWF56
Local name: Elephant Wall
GPS Coordinates: E15° 31 50.59/S21° 34 24.33

j.1.Site Description

The last site in Omandumba West farm in this study is the Elephant Wall also site OWF56. It's the westernmost of all sites in Omandumba Farms. It is an enormous, yellowish and uninterrupted expanse of a smooth granitic wall that lies vertically while facing 30° North (Fig. 6.42). It stands at an elevation of 1317m. Its painted surface measures approximately 30m long and about 15 high. The Elephant Wall is among those documented by *Abbé Breuil* in 1960s, (BREUIL 1960). The granite wall is visible from as far as 1km but the artworks are only visible from about 3m range.



Figure 6.42 Present the panoramic view of Panel OWF56

This open-air site is one of the most easily accessible sites in the Omandumba Farms. It is accessed by walking directly to the site from the farm road from Omandumba farmstead leading to the far western campsite slightly south of this very same wall. From a distance, the wall is surrounded by tall dry grass and thorny vegetation in a form of shrubs and medium acacia trees and some blue-leaved corkwood (*commiphora glaucescens*) that cover its northern face. Commonly evergreen white truck shepherd tree also ' *boscia albitrunca* ' is growing onto the granite wall of the site (Fig. 6.43)

below:

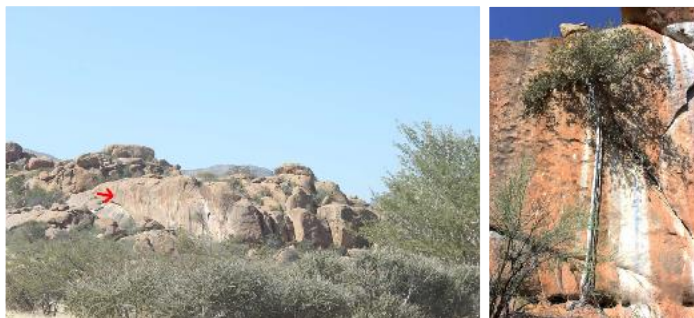


Figure 6.43 The left image shows the location of the site in the landscape (red arrow). View from north west of the site. The tight picture shows the shepherd tree growing onto the painted Wall. All pictures were taken after rainy season.

The figures scatter in the middle of the wall reachable by an average height and are facing 112° towards east where many rock art sites are to be found. Being slightly at a high altitude, the site provides an excellent view of kopjes, summits and hills surrounding the western valleys of the Erongo Mountains. Due to the presence of superimposition of figures in some pigment samples no greater than 20g were collected for mineral characterization by means of X-ray diffraction (XRD) and micro-Raman spectroscopy to determine the source of minerals used in the pigments at the site (see Fig. 5.18). The site's repertoire contains 51 figures recorded at four clusters with 11m apart (Fig. 6.45). Paintings on this wall are executed mainly in red, brown monochrome. They occupy several positions on the panel. Those in the first cluster are found at the extreme lower bottom of the panel, the second cluster are located in the middle towards bottom while those in the third cluster are found in the middle of the panel.

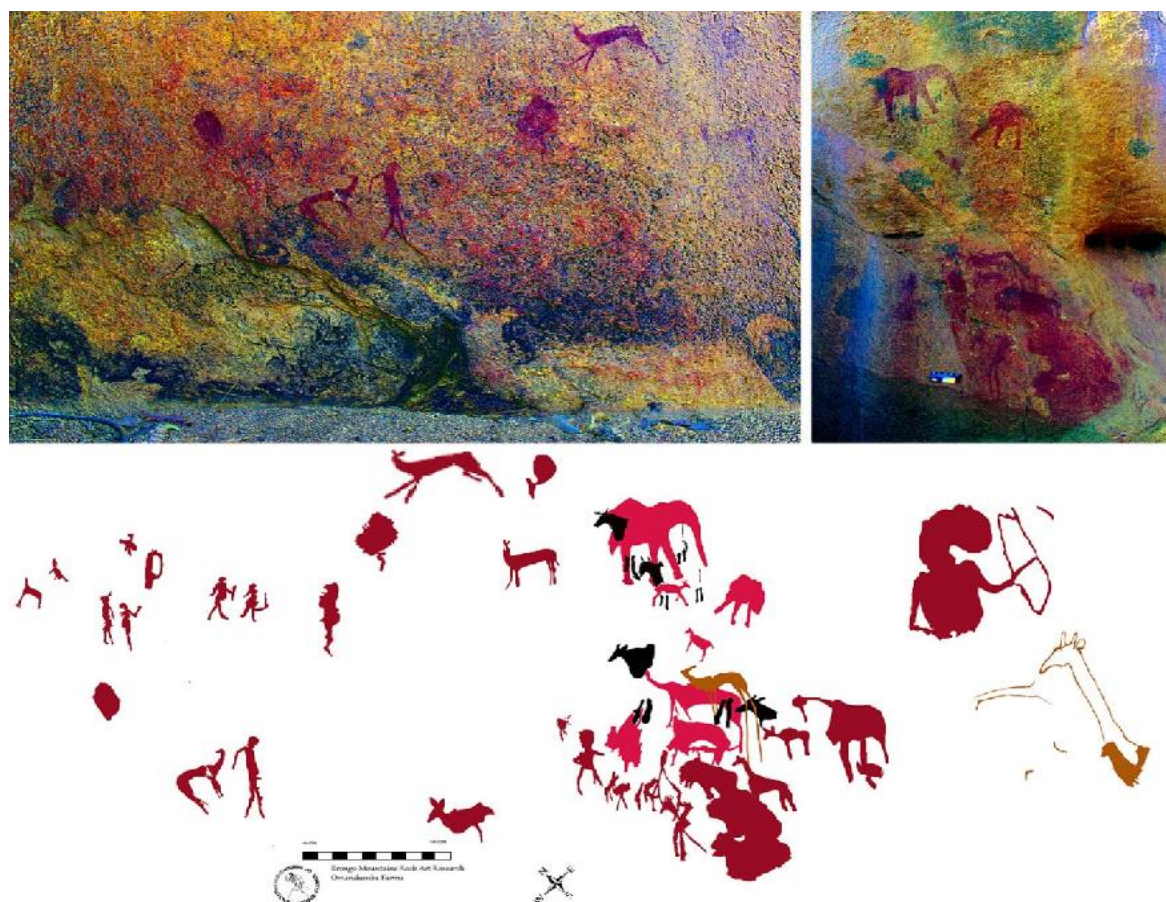


Figure 6.44 Shows reconstructed image of Panel OWF56. The top two images represents 2 clusters of figures, and they have all been DStretched at LDS 15cm scale. The bottom image shows the traced figures at the panel. Here, three phases of superimpositions are shown. The 1st phase in red and the 2nd phase are figures in brown & black colours and the 3rd phase are outlined animal figures in orange.

Among the recorded artworks, anthropomorphs are dominant. Some occur in singly while others are shown in pairs of what is likely to be intimate interactions while others are in groups. Anthropomorphs depictions accounts for 20 figures, with majority of the figures predominant of males 18 shown in different postures i.e. hunting scenes bearing their hunting tools. Women only account for 2 figures in the anthropomorphic repertoires. They are distinguished by their hairstyles, body shape, and breasts and are shown with swollen bellies/ pregnant while following their male partners. These two figures are placed about 4 meters away from each other and follow the same direction. Superimposition among human figures at this site has not been recorded at all. Figures are just adjacent to each other without any contact.

Zoomorphs depictions account for 20 figures in the repertoire. They comprised of 8 springboks painted in full bodies and red monochrome in different clusters on the panel with more or less the same sizes between 7cmx4cm, 6cmx4cm and 5cmx4cm. Giraffe's number account for 2 in the study. All two of them are adjacent to each other but are 1m apart from each other. Their bodies have been outlined showing only their outlined heads, ears and neckline features. The elephant figures account for 3 measuring between 40cmx35cm and 30cmx23cm.

The figures are fully painted in deep red monochrome while two bichrome elands (in black) are superimposed on the large elephant. The smaller one has been followed by a larger one painted in red monochrome is located slightly below showing only its back features while the mid-section and frontal features are not painted. It is on this figure that a few pigment powder granulation samples were collected for mineral analysis. It is important to stress that very insignificant damage was done to the figure that it is even difficult to detect with a naked or untrained eye. In addition to the elephant figures, we have also recorded a total of 4 elands measuring 8cmx6cm. Two of these have been superimposed on one larger elephant while 2 springboks in a different cluster have overlapped the remaining 2. They are all painted in black monochrome but showing only their legs, head lines and necklines. Moreover, was recorded measuring 8cmx6cm located 3m from the elephant cluster, a kudu 1 measuring 6cmx5cm found the extreme left of the panel, a springbok below the elephants and elands as well as 1 unidentifiable animal figures. The last category is that of indeterminate figures that account for 8 at the panel.

j.2.State of conservation

Overall, the majority of the artworks are in good state of conservation with exception of a few figures painted in red. Furthermore, the painted surface appears to be weathered, as white acid rains that run from top to bottom evidently washed its surface as run-off stains creating white lines that run across the panel is eminent.

The site is also prone to strong wind, which might be responsible for the loss of some small flakes that form part of the figure leaving the artwork disfigured. Such flakes might otherwise have held onto the rock face for a longer time but was knocked off by the process that started by the fluctuations of temperatures experienced in this part of Namibia. Furthermore, vegetation is also of a concern at the site, as it rubs onto rock surface containing the artwork. There is a charcoal graffiti westwards towards possibly by the visitors from the campsite southwest of the site.

j.3.Associated Archaeology

No surface collection.

k.OEF60

Panel ID: OEF60
Local Name: Ghost Cave
Number of panels: 2
GPS Location: E15°36'46.12/S 21°30'14.05

k.1.Site Description

The 'Ghost Cave' shelter is one of the mega sites in this study (see Fig. 5.20 and Fig. 6.45). It is found in Omandumba East farm. It is overhang in massive granite with two panels separated by a vertical crevice space in 4-5 meters of each other (BÖRNE 2013). It has a dimension of 45m long, up to 9m deep while the height of the overhang at the cave entrance exceeds 5m. It has developed along slightly convex-upward sheeting joining where the artworks at the first panel have been mounted on the ceiling. The site is found in a shallow cave located at the bottom of a prominent topographic scarp composed of a series of mountain rangers and extensive rock-cut plain at the foot slope.

The Ghost Cave site is accessed through driving in the well-established farm road through the flat valley in Omandumba East farmstead. Shallow meerkat colonies, some shrubs as well as grassland cover the site's surrounding. The site commands a good visibility of the immediate flat terrains and a chain of mountain range found on the northwestern side. Immediately south of this mountain range is the Omaruru River located north of the Mountain. This massive rock formation that hosts the cave sits stable on the ground while its western side is gently inclined on a rocky ridge. Geomorphologically, the cave shelter is not suitable for human habitation, (see Fig. 6.46) below.



Figure 6.45 Present the panoramic view of site OEF60. The red arrow indicates the location of the site in the landscape.

The site comprised of two panels, panel OEF60a and OEF60b that have been separated by a vertical crevice with different settings (Fig. 6.47). The current preservation conditions of the

artworks at the site range from very good to very poor. Those found in the ceiling of panel OEF60a well preserved.



Figure 6.46 Shows a panoramic view of the interior of site OEF60. To the left is Panel OEF60a while to the right is Panel OEF60b

This is attributed to the pigment used, their location (ceiling) with the cave shelter and the absence of insolation. Concerns at this panel is in a form of a thin coating layer of brown to black marks in the ceiling of the cave shelter obscuring some rock painting figures while making others difficult to detect especially those painted in black pigment. Past rain run-offs through natural cracks and joints flowing over in the ceiling of the cave shelter as well as at the edges of the overhang have left some white patches on the rock surfaces creating some wash zone flows. The artworks at the second panel are in a poor condition due to the fact that the artworks are painted mainly in white, light red and black pigment while the surface of the painted rock has developed layers of lime overlying the frieze in large parts, hence the artworks condition is moderate to very poor. Overall, the site contains an excess of 84 rock painting figures fully painted figures in black, brown, red and orange monochrome with some figures partially outlined to distinguish features of the particular subject. Almost all the figures are adjacent, juxtaposition to each other with elements of superimpositions observed especially at the first panel.

k.1.1.Panel OEF60a

The first panel, Panel OEF60a, stands at 1264m elevations while facing 20° towards North, overlooking a chain of mountain ranges to the north. The panel contains a total of 26 artworks found on the cave ceiling (Fig. 6.48) of about 2m long and 6m high. They have been painted in brown, black, and orange and in red monochrome. Most of them are in good state of conservation. The figures are adjacent to each other without contact while others have been superimposed over and by other figures in red and brown that allows identification of the painted subject.



Figure 6.47 Top image is a panoramic view of the interior of Panel OEF60a to the left while the bottom image shows a DStretched photo of the same panel. View from the north west side of the site. Images at 10cm scale.

The zoomorphic figures predominate with 25 depictions (Fig. 6.49). Among them are 4 elephants painted in pale red, with the large one measuring 81cmx30cm, the medium one 70cmx34cm while the two smaller ones are measures between 36xmx10cm and 30cmx19cm. These figures are placed at the bottom of other painted artworks. They are shown in a lateral view giving a sense of movement. The large ones are moving westwards while the younger ones are facing the opposite direction. Furthermore, other animals such as giraffes, kudu, and possibly a warthog and springbok figures have been superimposed on the elephants.

In addition, a lion 1 measuring 22cmx18cm was also recorded. It has been placed on top of all other animals near the largest giraffe to the right. Like the elephants, the lion has also been painted in great details and embodies its living counterpart. It is depicted with its fringe and

bushy hair that encircles its head while following a kudu. It has been painted fully in deep red monochrome, with its hind legs superimposed by an outlined neckline of a giraffe.

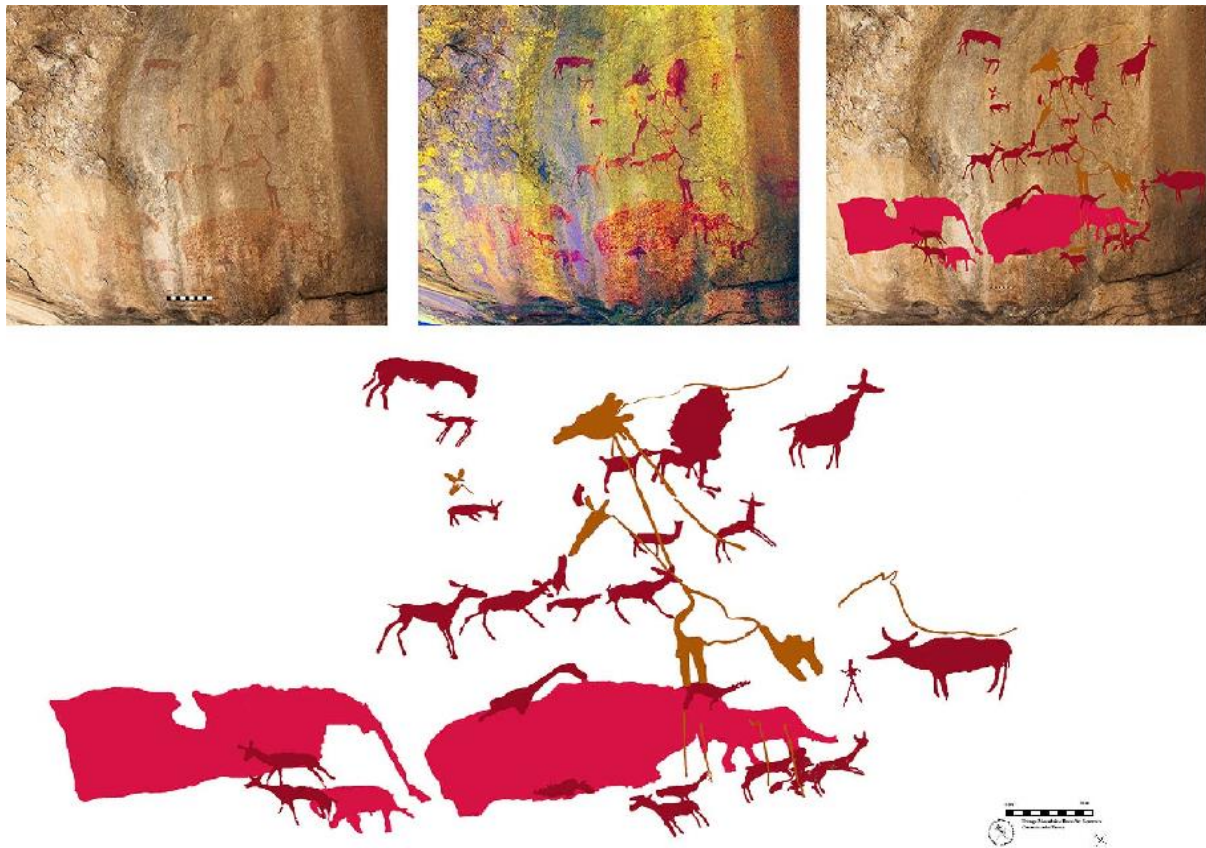


Figure 6.48 Shows reconstructed image of Panel OEF60a The top three images represents 2 clusters of figures, and they have all been DStretched at LDS 15cm scale. The bottom image shows the traced figures at the panel. Here, three phases of superimpositions are shown. The 1st phase in red and the 2nd phase are figures in brown colour and the 3rd phase are outlined animal figures in orange.

Other notable faunal species at the panel includes 4 giraffes measuring 80cmx22cm, 61cmx0cm and 26cmx6cm in size. They are painted only in two different styles - the fully painted monochromically and outlined with heads and some legs partly in filled with paint. The zoomorphs' repertoire also contains 1 warthog measuring 28cmx12cm superimposed over the second largest elephant and depicted facing westwards. In addition, a quagga or zebra have also been recorded, located above the giraffes whose head is seen bowed down in a submissive posture. All these animals are shown in movements. The kudu series accounts for 2 at the panel depicting hornless kudus.

Human representations account for only 1 figure measuring 9cmx4cm. It is located at the lower bottom of the larger giraffe painted in full brown monochrome and appear to be a man carrying a quiver bag. He is depicted walking towards animal herds. The indeterminate

category account for 1 animal figure located immediately beneath the second larger elephant and in front of the well-executed small elephant that does not show its biological identification as it lacks its anatomical reference.

k.1.2.Panel OEF60b

The second panel at the site, panel OEF60b is located 3m west of the previous panel (Fig. 6.49). It stands at 1266m while oriented 45° northwards. It measures 2.3m long and 3m high. Panel OEF60b comprised of two clusters, one located on the wall of the cave shelter while the second cluster is a small darkish horizontal boulder located beneath the cave wall. The panel's artworks are visible from 3m distances.



Figure 6.49 Shows a panoramic view of the interior of Panel OEF60b. View from northwestern side of the panel.

In total, the panel consists of 58 figures (Fig. 6.51 & Fig. 6.52), of which 51 were recorded at the first cluster and 7 figures at the second cluster. All figures have been painted in black, red and in white monochrome and bichrome (red and white). Their state of conservation range from moderate to poorly preserve as a result of the developed layer of lime calcite and well as mud-wasp nests covering a larger part of the panel where the artworks are mounted. Most of the depictions are naturalistic drawn, following the horizontal rock morphology. Similarly to the previous panel, most of the figures here are adjacent to each other with three layers of superimpositions. White pigment was collected at one of the human figure for pigment analysis in 2016. Anthropomorphic representations at the panel (both clusters) are predominant and accounts for 28 figures in total. All anthropomorphs appear to be men-bearing hunting weapons and sticks. The male figures are depicted carrying hunting weapons.

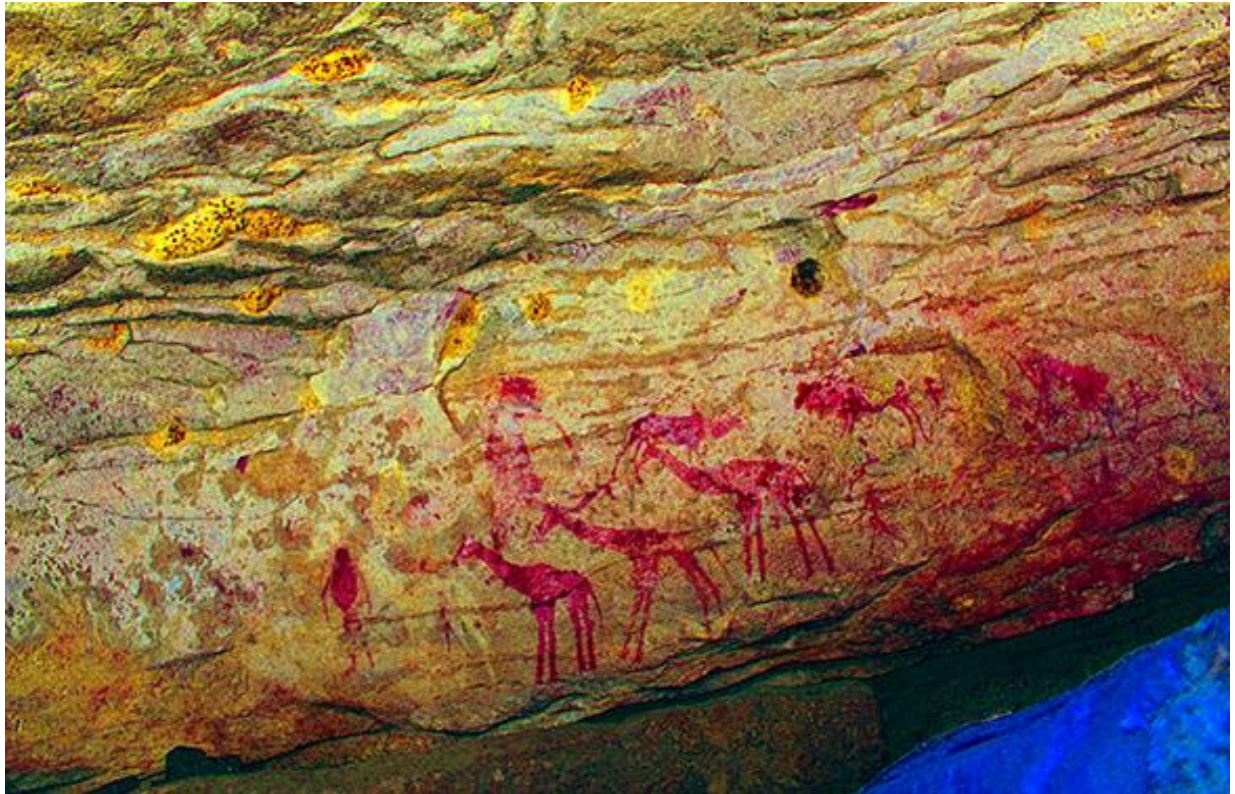


Figure 6.50 Shows reconstructed image of Panel OEF60b, CLUSTER 1. The top three images have been stitched and DStretched at LDS 15cm scale. The bottom image shows some of the traced figures at the panel. Here, three phases of superimpositions are shown. The 1st phase in red and the 2nd phase are figures in brown colour and the 3rd phase.

The two prominent human figures at the panel are those of lager men, both very bulky with thin waist, thick upper bodies and thick legs. One is being depicted walking carrying a long

stick. He is being followed by a giraffe painted solely in white pigment and other herds of different animals while he is following a superimposed bichrome ostrich painted in red and white while the other one is shown walking steadily on top of two red large giraffes following the same direction (east) where most of the figures are oriented. Other human figures at the panel are relatively small depicted in singly, in pairs while the rest are found in groups of four to five bearing weapons.

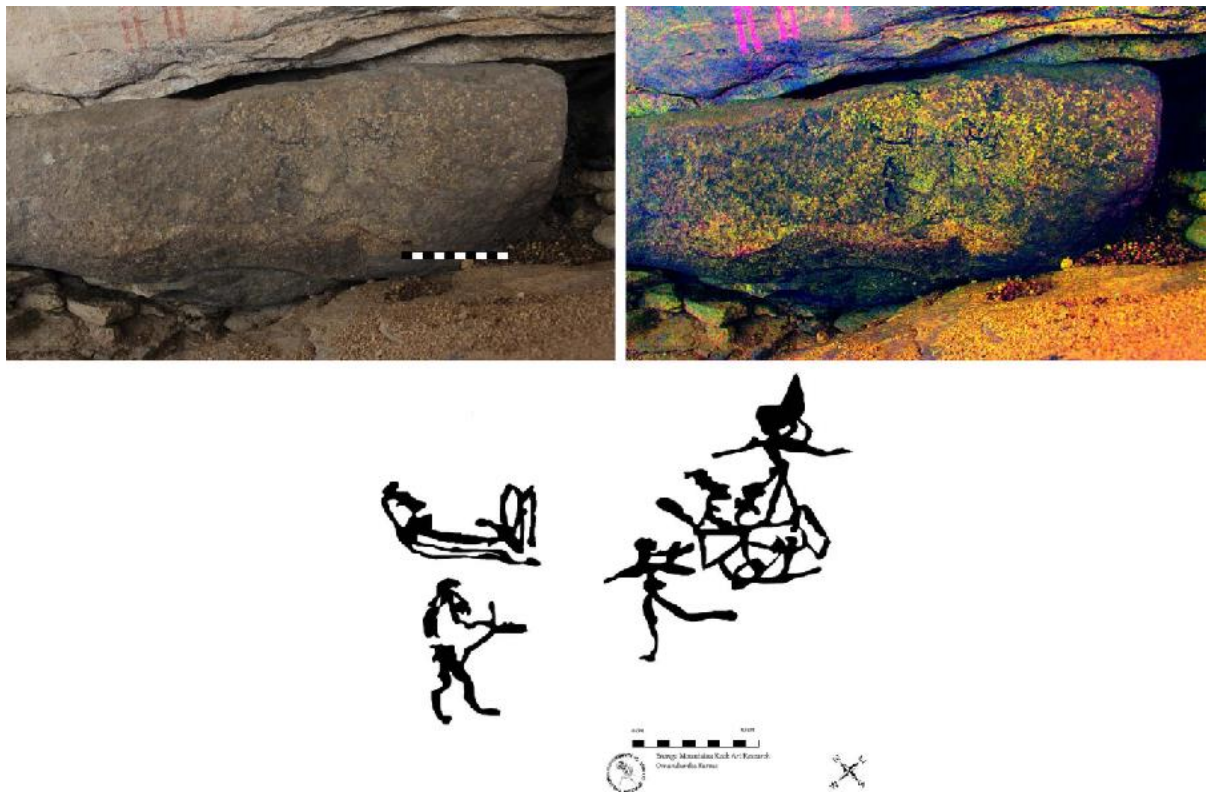


Figure 6.51 Shows reconstructed image of Panel OEF60b, CLUSTER 2. The Image top left is the original while to the right has been DStretched at LDS 20 cm scale.

Other figures that have been grouped into human category are those regarded as “Ghost figures” from where the site got its name. This type of figures, although rare, are not only found in the Erongo complex but other several sites in the Erongo cultural landscape such as in the Klein Spitzkoppe mountain where they have been recorded also in white pigment. On this panel, the ghost figures are painted exclusively in white and have physical morphology mimicking human traits such as their round or oval heads, neckline and shoulders. They are quite large and measures between 26cmx10cm, 19cmx21cm and 17cmx18cm in sizes. The rest of the anthropomorphs representations are those found on the loose horizontal boulder beneath the cave shelter below the break line are relatively small measuring between 7cmx4cm, 5cmx4cm and 4cmx3cm in size and are all painted in black pigment whose activities could not been determined due to poor conservation status of the artworks. The

zoomorphic assemblage of the panel contains 18 representations with larger animals measuring between 40cmx36cm, 38.6cmx28cm, 36cmx30cm, 26cmx23cm, 24cmx20cm, 20cmx18cm and smaller one between 23cmx20cm, 19cmx19, 18cmx16 and 10cmx12cm in sizes. The faunal taxa at this panel are relatively easy to identify. This is attributed to the remarkable degree of naturalism and clear pigment used. They are painted mostly in white, red and brown monochrome as well as one ostrich figure in bichrome (red and white).

Among the recorded animals at the panel, are 5 giraffes, executed in the same style-fully painted. They are located at the bottom of all other animal figures beneath the cave wall. One of the white giraffe has been superimposed by human figure - a woman painted in red monochrome. While four large naturalistic giraffes painted in red pigment are shown following the white giraffe. In addition to giraffes, the panel assemblage also contains 9 kudus, of which 2 have been identified as kudu bulls seen trotting westwards (as opposed to east -where most of the animal figures are oriented). Just as they are found in the landscape, they are also shown in groups of three and more while the kudu bulls appear to be isolated, in a herd of other animal figures. White paint has been used in combination with brownish color to distinguish feature of an ostrich. Here, the white color has been utilized to emphasize the ostrich's head; neckline, backline as well as its legs while the brown color complemented the animal 'body. The last faunal figures recorded at the panel consist of 2 springbok figures painted fully in brown monochrome. The indeterminate category accounts for 14 figures, which lack any biological as a result of poor conservation.

k.2.Associated Archaeology

No surface collection.



Omandumba West farm valley. View from Porters Boulders and Wall sites.

6.1.5.Part B: Spatial Analyses of Landscape Attributes

The following spatial analysis investigates the landscape variables of the rock art sites. It consists of 8 landscape variables: sites placement (1), elevation (2), proximity to water sources (3), proximity to trails (4), accessibility (5) aspect/orientation (6) visibilities of the rock art sites in the landscape and (7) the positioning of rock painted figures onto rock surfaces.

a. Site Placement

The following two tables (Table 6.1 & 6.2) provide an overview of the geomorphological settings in which rock painting and engravings were found in our study area. As indicated, the rock art sites are widely distributed across this cultural landscape and found in two different geological settings: granite and basalt. These influenced the two techniques of artworks production, paintings and engravings. Paintings are mounted primarily on boulders, cliff faces, granitic walls, caves, ledge/sill and ceilings of rock shelters. Such geomorphological features are widely distributed across this cultural landscape, from; kopjes, hills, rock outcrops and isolated boulders in flat valleys. Engravings are found predominantly a riverbed.

Type of sites	OEF (n=5)	%	OWF (n=56)	%	SUM (n=61)	Total%
Boulders	1	20	43	76%	44	72%
Shelters	0	0%	5	9%	5	8%
Walls	1	20	4	7%	5	8%
Caves	1	20	2	4%	3	5%
Ledges/Sills	1	20	2	4%	3	5%
Riverbed	1	20	0	0%	1	2%

Table 6.1 The geomorphological settings of the rock painting sites recorded in Omandumba East and West Farms.

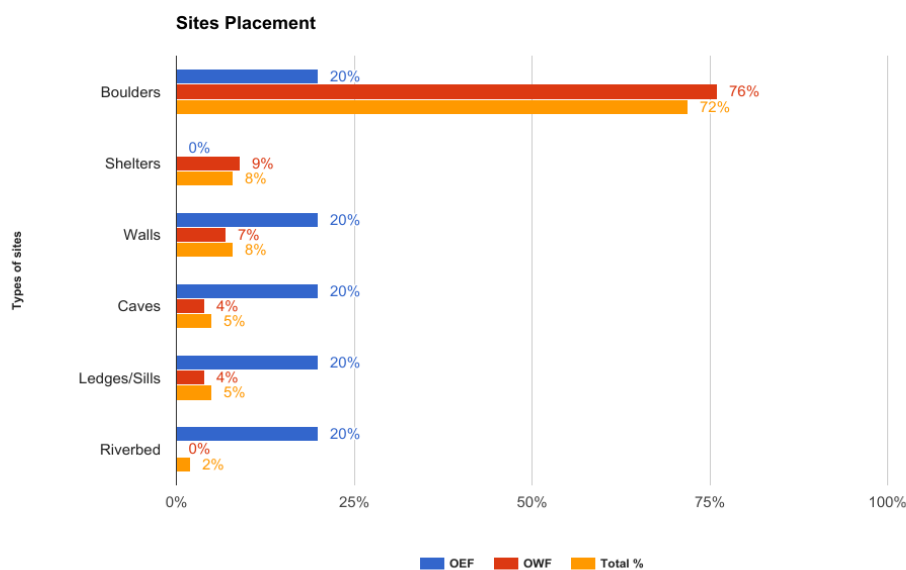


Table 6.2 Site placement analyses of the rock art sites recorded in the Omandumba East and West Farms.

The sites placement analysis reveals the majority of rock art been executed on various boulders, with 72% found in different settings in the study areas, (Table 6.1 & Table 6.2). A total of 5 sites representing 8% occur most frequently in rock shelters, while four sites accounting 8% are those found granitic walls. Additionally, sites found in caves and ledge/sill account for 5% each while only one representing 2% sites has been recorded in the riverbed in the study areas. The geomorphological setting and location of these sites are discussed in details below.

b. Painted boulders

As indicated, sites occurring on boulders are the most frequent in the study accounting 72% of the total sites. The painted boulders are widely distributed across this cultural landscape. These light brown coarse-grained boulders vary considerably in sizes and shape. Some are impeccably rounded while others have much more complex morphologies, but both have brown protective crust susceptible to exfoliation. In the study areas, the majority of painted boulders are found at two topographical locations: firstly, those that rests at the foot of the rock outcrops, kopje and hills below 1198m contour, (see for example: Tuba Rock/site OWF50 and Crown Boulder/site OWF52 Fig.6.53 below) and many others sites.



Figure 6.53 Omandumba West Farm Landscapes. On the left are painted boulders at the bottom of a hill: Tuba, Crown, Site OWF51, OWF53 and OWF55. On the right painted boulders in an isolated rock outcrop: Site OWF18, OWF19 and OWF20.

Those occurring completely independent in the landscape away from any imposing dimensions are often easily accessible and have immediate access to the landscape and resources such as water sources. Visibility of the sites largely influenced by vegetation covers, their geomorphological formation, size and the location they occupy in the landscape. Boulders hosting these sites are very stable but often exposed at the surface to various degrees of increment weather conditions and other biological threats that continue to alter

their surfaces. This, in combination with the natural color of the granites as well as the use of the earth color pigments makes rock paintings more challenging to identify.

Secondly, painted boulders located primarily on top of the imposing dimensions i.e. the upper part of large outcrops, hills, kopje and mountain ranges over 1258m contours. Often, these sites are barely visible from the foot of their imposing features but command a great view of the wider landscape from their topographical locations. Accessibility to these sites often necessitated climbing, sometimes painstakingly crawling while in some cases it's obvious that the artists as well as the audiences had to stretch in difficult positions to reach the sites i.e. OWF44 and OWF45 (Fig. 6.54) below.



Figure 6.54 Omandumba West Farm Landscapes. The left image is the northern Hill of site OWF44 view from Leopard Cave. The right image is the Kopje complex of site OWF45 near Priests Shelter.

Some of these granitic boulders are ordinary looking while others gives an impression that they were chosen due to their topographic settings in the landscape. They rise above Erongo flat valleys as landmarks on their own and are visible from a considerable distances but surprisingly; very few of these make suitable living areas. This might be attributed by the fact that the boulders provides little shelter and many of them are located far away (approximately 1Km) away from water points in form of rivers and springs. The seasonal pools found in between rock crevices of these sites only contain water shortly after rainy season and becomes dry immediately due to high rate of evaporations and the fact that these pools are often very shallow.

Most of these sites have limited spaces to manoeuvre around them, which often restrains recording and documentation process. While some required a ladder or climb on top of granitic crests to record the artworks, and in most cases such positions becomes a most arduous procedure.

c. Painted rock shelters

The second groups of artworks are those recorded in rock shelters, accounting for 8% of the sites in the study areas, some of which provide option for habitations. They comprised of five rock shelters all, found in Omandumba West farm: OWF49/Seal Shelter, OWF42/Fackelträger, OWF30/Christian shelter, OWF46/Priests Shelter, OWF47/Ostrich shelter and OWF25/Blackman shelters. The geomorphology formation of these shelters differs: firstly, there are those that are formed when two or more granitic boulders lean against each other to form a small living area or as a result of boulder parting from the parent rock to form an overhang like shelter i.e. Christian, Priests and Seal, Ostrich and Blackman shelters which represents 98%. Secondly, those with hollow cave like opening at the base of the granite rocks, for instance the Fackelträger Shelter, which represents only 2% of 8% the total rock shelter in the study (Fig. 6.55) below.



Figure 6.55 Omandumba West Farm Left: Seal Shelter, Right: Northern View of Fackelträger Shelter.

They are also widely distributed in various locations across the landscape, from those located at the foot of imposing landmarks below 1100m to those located on high topographical features above 1200m above sea level. However, although their placement varies, their common attribute is their proximity to water sources in form of river, springs and other natural pools such as ponds. Of all of the five rock shelters in the study, three of them: Fackelträger, Christian, Priests and Ostrich rock shelters are located on top of outcrop, Kopje and Hill while Blackman & Seal shelters rests at the foot of the different hills. Rock shelters located predominantly on top of large prominent hills, kopje and outcrops have excellent visual impressions of the Omandumba West landscapes.

These sites conveniently occupy vantage points, viewing the larger landscape. Due to their topographical locations, it is possible that the whole landscape was kept under surveillance and allowed hunters to observe the movements of both people and animals and also to spot

animal movements. However, among them only Fackelträger, Christian and the Blackman Shelters show a solid evidence of human occupations in form unspecified quantity of Late Stone Age surface collections.

Not all the rock shelters located on higher topographical locations in the study area were inhabited. Some of them are too small, characterized by steep floors and with no record of surface archaeological collections. These include the Priests and Ostrich Shelters. The concealed nature and inaccessibility of these rock shelters suggests that they may have not be open for every visitor as they are secluded. It is therefore possible that they may have served as ‘sacred locations’ where activities associated with ritual and religious significances may have been performed.

Rock shelters located at the bottom of imposing granitic dimensions e.g. Seal and Blackman shelter as well as or those found in small outcrop like the Fackelträger shelter may have served as seasonal habitation sites. It is highly possible that these sites were regularly used and revisited seasonally as some archaeological evidence i.e. at Fackelträger indicated sequences of occupations (VIERECK, 1967; WENDT 1972; RICHTER 1991). They also have direct access to natural resources.

d. Painted Granite Walls

Eight percent (8%) of painting sites were recorded on large granitic walls. Four of the recorded granite Walls are found in Omandumba West such as: the prominent Elephant Wall, Strey/Monument Wall, Hidden Wall and Die Bergsteiger Wall while the fifth granitic wall was recorded in Omandumba East Farm, site OEF57, (Fig. 6.56).



Figure 6.56 Left: is the Elephant Wall in OWF while Right is Site OEF57 in OEF.

These massive smooth imposing large granitic walls are virtually free standing and hosts many disconnected clusters of paintings. Most of the walls are 30 to 80m long and are easily

accessible on foot but are not found in proximity to water sources. Furthermore, the sites appear to have been uninhabited because there is no evidence of human occupation in form of surface archaeological collections other than rock paintings. This is possible because the walls do not shelter. The walls are exposed to the sun throughout the day, with the exception of those oriented southerly i.e. Site OEF57 and Die Bergsteiger Wall/site OWF04. The state conservation of most of artworks at these sites is surprisingly good, especially those placed in the middle on the wall owing to the very compact nature of the granite, which has tendency not to scale easily. However, there are clusters of paintings especially those (on the same Wall) located in at the extreme bottom of these walls that are poorly preserved. And in most cases, this is attributed by a number of factor including, vegetation growing onto lower section of the painted wall surfaces, dust accumulations from animals as well as animal scratching their bodies onto the painted surfaces i.e. Die Bergsteiger Wall/OWF04 and Site OEF57.

e. Painted Caves

In the painting repertoire, a total number of three shallow or open-air caves representing 5% of total recorded sites were recorded (Fig. 6.57). Two of these are open-air caves i.e. site OWF42/Leopard Cave in Omandumba West farm and OEF60/ Ghost Cave in Omandumba East. The last cave is the Giraffe Cave found in Omandumba West. Leopard and Ghost caves have similar geomorphological formations. Both Caves are concave overhangs with granite boulders subsequently covering half of them with other several huge rocks beneath them measuring about 50m² and 70m² long and up to up to 6m deep while their entrances are wider than 5m to 18m.

The Giraffe Cave on the other hand is a small cave with a small opening and a on a large boulder. The Cave is very low and is filled with sediments deposits. Unlike the artworks of Leopard and Ghost Caves that are executed the interiors of the caves, those at Giraffe Cave are executed on its exterior wall immediately above the cave entrance. The Caves are easily accessible of them are located at foot of large slopes. However, accessing the inside of the Giraffe caves necessitate crawling and bending, as it has a low roof. Ghost Cave is inhabitable, but richly in rock painting sites. Giraffe Cave sedimentations prove to be worthy of investigations.



Figure 6.57 Image on the top left shows the Leopard Cave. The right image shows the Giraffe Cave while the bottom image represents the Ghost cave.

f. Painted Rock Ledges/sills

Rock painting sites executed on rock ledges/sills accounts for 5% in the repertoire. These comprised of those found in Omandumba West such as Strey Boulder and the Bergsteiger Wall and Site OEF58b in Omandumba East farm, found protruding on the rock ledge/sill, along a narrow horizontal smooth granite surfaces projecting from a wall of a boulders surfaces of 15 to 2m long (Fig. 6.58). For instance, Strey Boulder site is located on top of north most granitic hill. Geomorphological, it's a single standing boulder/ cliff face with a dome shape of about three meters high formed by several smaller boulders and completed by a fungal capstone. Bergsteiger Wall on the other hand is a horizontal ledge found on massive granite Wall of about 30m long resting on the ground while Site OEF55b, is a massive boulder resting on top of another layer of granite beneath it in one of the rock outcrop in Omandumba East farm.

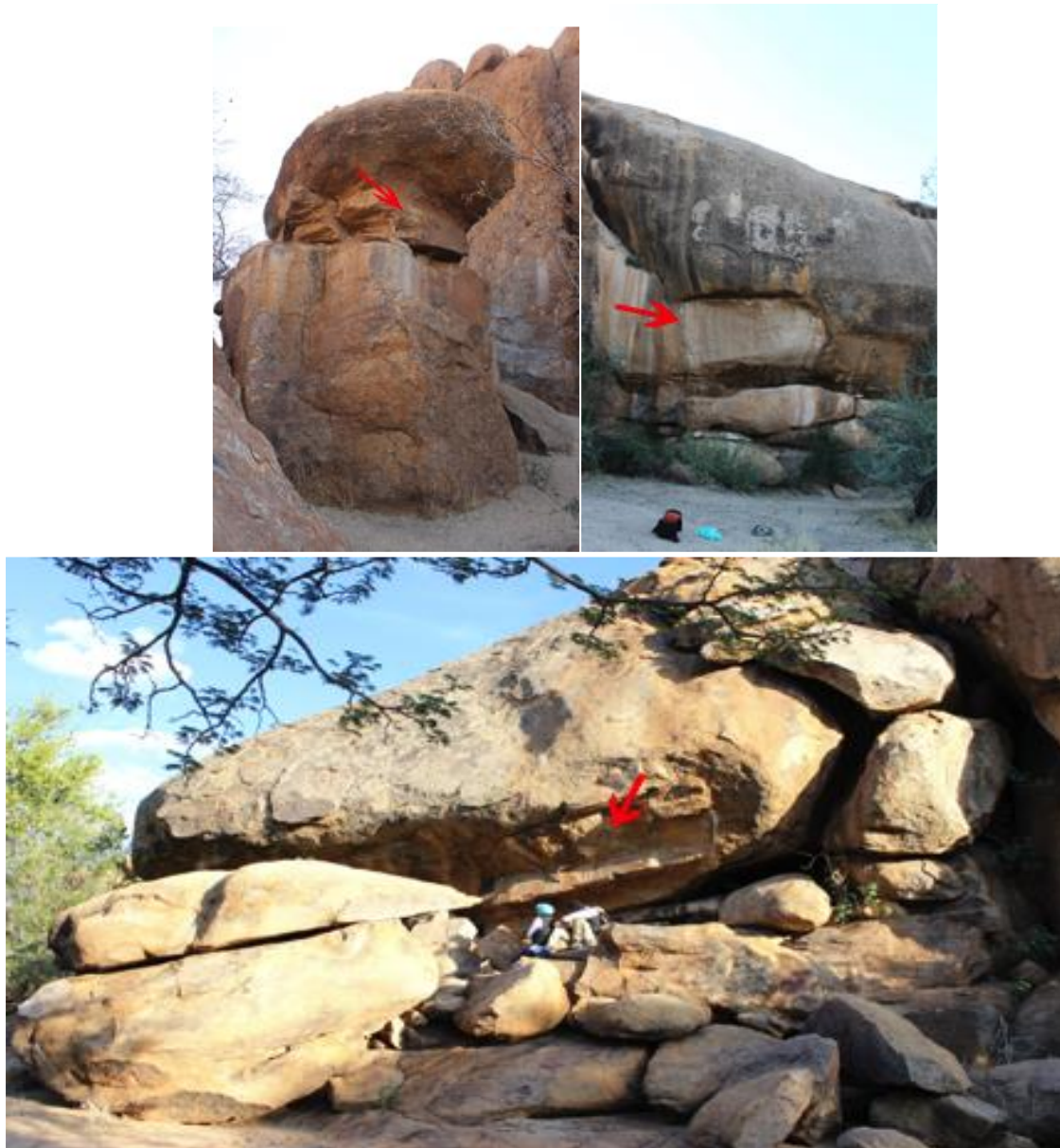


Figure 6.58 Top left image shows the painted ledge of Strey boulder; to the right is the Bergsteiger Wall while the bottom image shows the site OEF55b.

Both sites are easily accessible by foot. However, documenting them was rather challenging. For instance, at Strey boulder, we were required to use of a ladder as climbing proved not effective due to the smooth nature of the granite while at site OWF04b, climbing and crawling on the ledge platform of the large granitic wall was inevitable.

g. Engraved riverbed

The last categories of artworks are those in the riverbed, the engraving site OEF61 located in Omandumba East farm where a total of 50 rock engravings panels were recorded and account for 2%. The engraved basalt panels are distributed along the north and eastern axis of a

riverbed that covers an area of approximately 600 meters. Both axis consisting of basal flow features flank, a narrow low elevation riverbed flanked by sun baked large masses of boulders with a thin layer of reddish iron oxide that have been pecked and abraded to reveal the lighter rock beneath it (Fig. 6.59). The boulders generally differ in dimensions and shapes (with large one between 2 to 2.5m and 50 to 150 cm). Panels appear like large masses of boulders that might have been rolled down from the vertical walls coming to rest at the foot of the walls and in the riverbed Most of these panels appear physically stable with hard surfaces but responsive to erosion or weathering elements. However, it is evident that some of the engraved panels become submerged during rainy season as we observed rainwater stains on some of the boulders and rock crevice. The entire site's analysis is presented further in Section B.



Figure 6.59 Omandumba East Site OEF61 also the Engraving Sit in Omandumba East Farm after good rain. Image credits: Harald Rust.

h.Elevation

Another important landscape attribute taken into consideration was the topography of the rock art sites This was relevant in order to evaluate associations (if any) of rock art sites at various topographic elevations and their proximity to what (LENSSEN-ERZ 2001:51) termed, 'basic needs' or natural resources i.e. water, food and shelter. To determine the

frequencies of sites and their artworks at each topographical level, the elevation analysis used 30m and divided it into five levels (see Fig. 6.60 and Table 6.3).

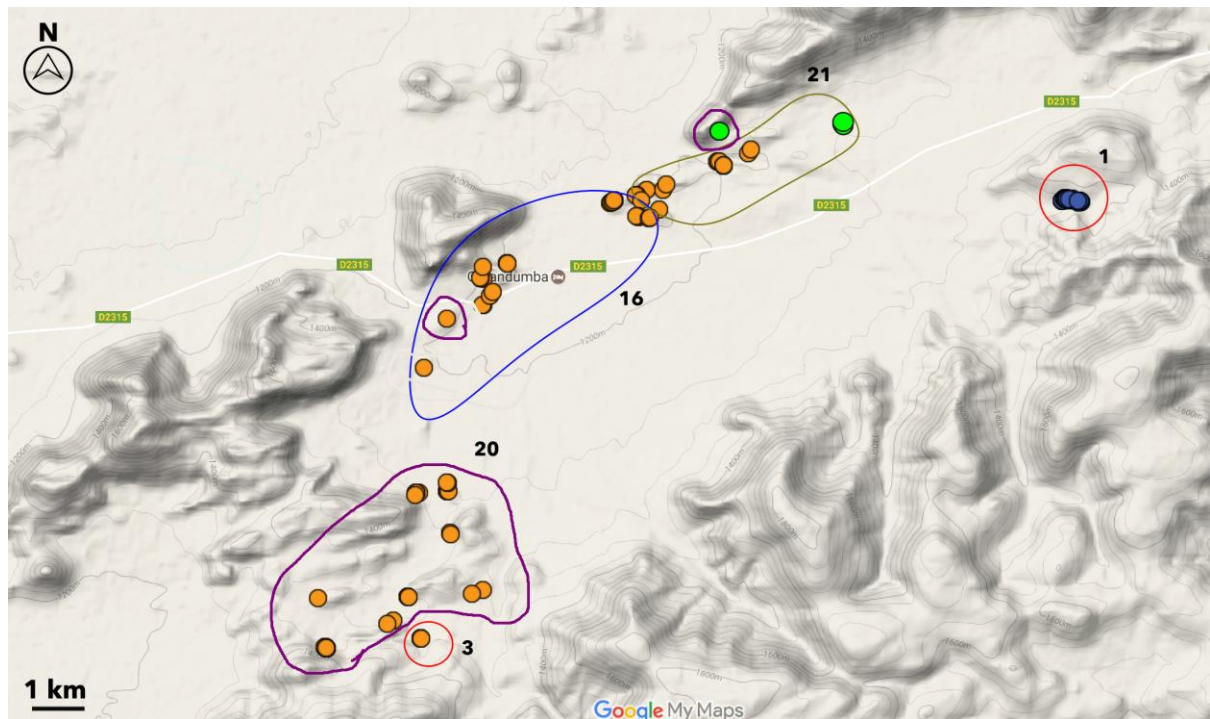


Figure 6.60 Base Map showing sites at various topographical levels in the study areas. Map Credits: Google Maps.

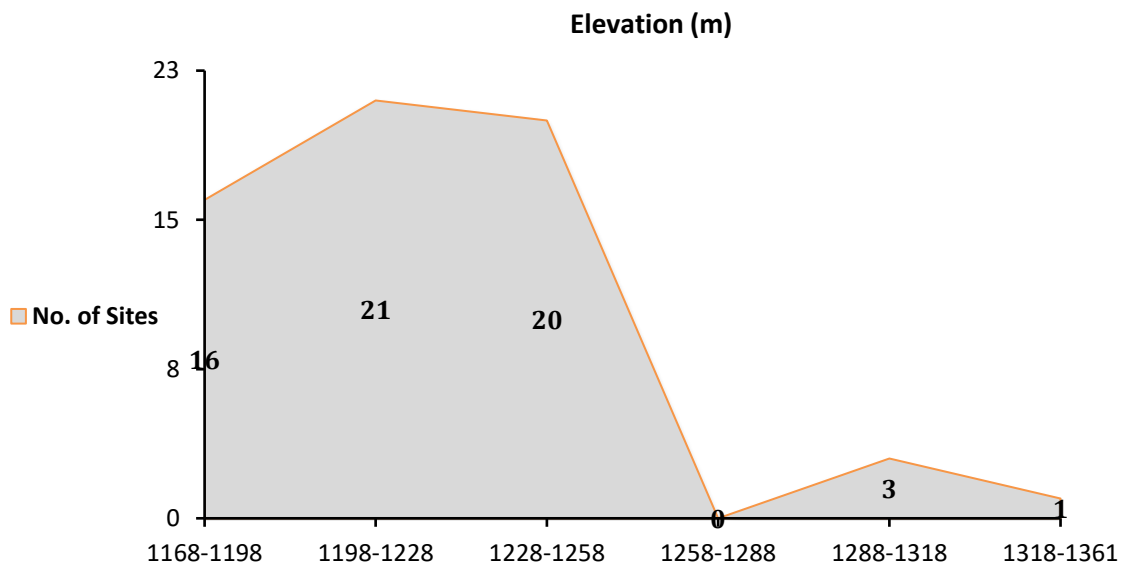


Table 6.3 Topography Variables of Omandumba East and West Rock Art Sites

All rock-painting sites in study areas occur between 1168-1361 meters elevations. The majorities, 21 sites representing (34%) of all rock art sites are found between 1198-1228m above sea level. These sites are primarily found at the foot of the hills and outcrops and most of them have neighbouring sites. Example of sites found at this topographical location includes site OWF15, OWF19, OWF49, OWF52 among others. The majority of the sites are

boulders (20), hence not habitable while only one shelter (OWF49) show evidence of human habitation. These sites have direct access to wider landscape, and are easily accessed on foot. Most of them are found in proximity to natural resources – for instance, site (OWF49, OWF35, OWF34, OWF33) are extremely located in proximity to water point in form of a spring as well as game trails. In general, these sites hosts approximately between 5-12 artworks each site, and the artworks have high visibility ratio beyond 15m ranges. In addition to these sites, are the sites occurring between 1228-1258 meters topography. They comprised of 20 sites representing 33%. Data obtained from the elevations analysis of these sites indicate a total 300 artworks registered under this category. The majority of these sites hosts about 2-15 figures on average. Examples of such sites are the OWF01, OWF02, OWF11, OWF12, OWF53, and OWF56. These sites are not suitable for human habitation as they are all hosted on boulders and walls.

The third groups of rock art sites are those recorded at the lowest topographical level between 1168-1198 meters above sea level, corresponding to 16 sites representing 26%. Example of these sites are site OWF42, OWF04, OWF06, OWF07 and OWF13. Like the previous category, some of these sites are equally not habitable as they are found mainly on boulders and ledges with no prospect of shelters. However, there are some that serves as short-term living spaces, as they contain few human traces. It is possible that they might have served as overnight stations for hunters. Examples of such sites are site OWF25, OWF27, OWF28, OWF29 and OWF32. According to Tilman Lenssen-Erz (LENSSEN-EZ 2004:145-46) classification of sites, sites under this category falls under class B. No rock art sites were recorded between 1258-1288 meters elevation but the last group of rock painting sites are those occurring between above 1288 – 1318 meters consisting of 3 sites corresponding the 5% of the total sites. These sites contain about 300 artworks. Examples of sites under this category are the site OWF30, OWF46 and OWF47. Only one of these sites (OWF30) is habitable with significant more painting.

It is however, not found near natural infrastructures such as water. While the game trails around this site have also been found quite far from it. Under (LENSSEN-ERZ 2004) classification, it also falls under class B while the other two sites falls under class F. The last category is that of engraving site representing 2% of sites found between 1318-1361 meters elevation. The elevation analysis of the engraving site is found in Section B.

i. Proximity to Water Sources

The proximity to water sources analysis evaluates the general distribution of rock art sites and their immediacy to the three types of water sources identified in the study areas namely: (1) rivers, (2) springs and (3) ponds/pools (Fig. 6.61 & Fig. 6.62) also (see also Chapter 2. {2.4}, for definitions of these water bodies). The analyses were important in order to understand whether water sources might have influenced the choice in the location of rock art sites. For this, calculations were made of distance in meters from rock art sites to bodies of water using QGIS. To achieve this, the distance calculations are given in 100 meters intervals, thus subdivided into six categories (Table 6.4).

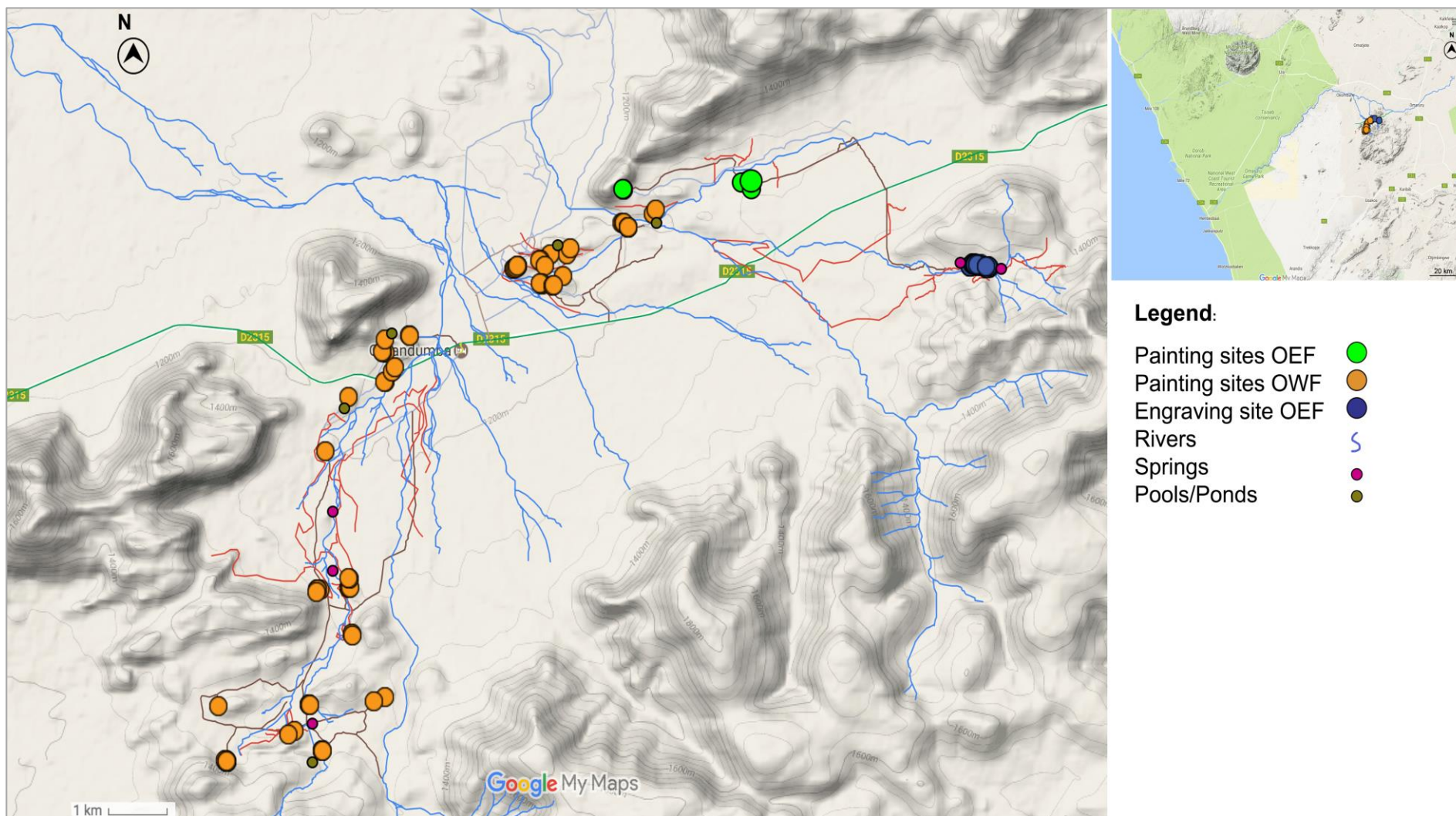


Figure 6.61 Proximity of Rock Art Sites to Water Sources in Omandumba East and West Farms. The insert map of Central Namibia indicates the location of Erongo Mountains as well as the Omaruru River (that feeds water sources in Omandumba Farms) flowing into the Atlantic Ocean. Map Credits: Google Maps.

Proximity Variables (m)	No. Of Rock Art Sites (n=61)	Rock Art Sites %
Proximity to Rivers		
0-100	30	49%
101-200	11	18%
201-300	7	11%
301-400	5	8%
401-500	4	7%
501-1km	0	0%
>1.1km	4	7%
Proximity to Springs		
0-100	7	11%
101-200	4	7%
201-300	4	7%
301-400	10	16%
401-500	10	16%
501-1km	20	33%
>1.1km	6	10%
Proximity to Ponds		
0-100	6	10%
101-200	1	2%
201-300	2	3%
301-400	2	3%
401-500	7	11%
501-1km	12	20%
>1.1km	31	1%

Table 6.4 Summary of sites in proximity to water Sources in Omandumba East and West Farms

The results indicate that all the rock art sites 61 in the study areas occur in proximity to various water sources at various distances. (Table 6.4) details the results queries for the sites in relation to water sources. The analysis indicates the majority of the sites (49%) are those 100m from the rivers. Examples of such sites are all the sites between 1168- 1361 meters elevations and those found between 1198-1228m topography (see topography analysis).

These sites have direct access to wider landscape, game trails and are easily accessed on foot. The majority of these sites are hosted predominantly on boulders that do not shelter, but with few human traces like rock art and artefacts. These are same sites that are 100m very closer to springs but quite far off (beyond 1km) from ponds/pools. This is because, ponds are only found principally on hilltop / up slopes where very few isolated sites are found.

The 200m searches yielded 18% sites in proximity to rivers, but only 7% of these are located near springs. However these sites corresponds to 1km representing 20% of the sites located from the ponds. Again, this is because the majority of these sites are located in locations occurring between 1198-1228m and 1228-1258 meters topography, which is found either in the valleys or behind outcrops, yet not so far from water points. These sites are not suitable for human habitation as they are all hosted on boulders and walls. Most of these sites equally have neighbouring sites located in less than 4-10 minutes reach. However, the majority of these sites have low quantity of surface artefacts often between (0 and 5) and with average number of rock painting figures between (1-26).

Database search for sites located between 300m and 400 indicates 15% sites in proximity to rivers, 32% closer to springs and only 6% nearer ponds. Topographically, these sites are located largely found towards 1198m and 1258m topographical locations. The density of sites under these topographical location corresponds to sites that are found mostly in rock shelters, a cave shelter and some sites with strong evidence of human habitation as indicated by either high concentration of rock paintings and high surface archaeological collections or sites with high paintings and medium quantity of surface artefacts. Examples of such sites are OWF11, OWF15, OWF19, OW20, OWF21, OWF25, OWF30, OWF39, OWF42, and OWF49 among others. Based on human evidence found these sites, it is likely that these some of the sites may have served as short-term living sites, long-term living sites and one aggregate camp (OWF39/ Fackelträger Shelter and site OWF49/Seal Shelter). Like the previous sites, they too have direct access to immediate surrounding, offers good visibility of the landscape and are not so far from natural resources. The database search for sites located from 1km beyond become account for 7% in proximity to rivers and 10% from springs. From the sites analysis, these are among the sites that are found within 100m from water ponds/pools. Topographically, all these sites are predominantly found on high elevations between 1288-1361. Examples of such sites are OWF43, OWF44, OWF45, OWF46, OWF47 and OEF61 O at the foot of slopes and hills i.e. OWFS sites located proximity to riviers, in 500 meters

reach are mostly those hosted in boulders and rock shelters i.e. located at the bottom of hills, kopje and in rock outcrops. Most of these sites equally have neighbouring sites (but extremely few) located between 1-3 minutes reach. However, the majority of these sites have low quantity of surface artefacts often between (0 and 5) and with average number of rock painting figures between (1-10) which suggests that they might have not been occupied as supported by their geomorphology. These sites are secluded, often hidden and their orientations makes them difficult to receive light, hence their visibility is reduced, just like their artworks' visibility.



Figure 6.62 Water sources in the study areas. Top left is a water pool (photo taken after rain season). Top right is a permanent spring (photo taken during dry season). Bottom is one of river flowing after rain season. Top left and bottom images taken in November 2012.

h. Proximity to Animal Trails

Proximity to animal trails is another landscape analysis investigated in this study. The current trail systems indicate movement patterns of animals across the landscape. The trails were studied immediately after rainy seasons (when surface water – rivers, springs and ponds/pools is available) almost at every catchment area as well as during dry seasons when water points are extremely limited. This was important in order to comprehend animal travel movements through the landscape. What the study discovered was the fact that as water points increases throughout Erongo Mountains during and immediately after rainy seasons, animal movements are limited, and this is attributed by the fact that water is readily available where animal lives hence little movements. But the situation change straightaway when water points become scarce. The trail systems become reactivated as animals travel movements' increases. In Omandumba farms, such trails follow natural travel routes –rivers, all the way to where permanent water (springs) is found (see Fig 6.63 & Table 6.5).

Therefore, the likelihood of such trails system to have been used by both animals and prehistoric people to access resources (food and water) in dry region like Central Namib where water sources are available in limited supply is high. Although I evaluate spatial relationships to modern animal trails in the study areas, it is possible that some these trails undoubtedly follows existing paths established by the animal movements during prehistoric period given the fact that “Namibia’s climate has been rather similar to what it is today (HEINE 2005:127) and no significant changes in infrastructures (water sources) in the landscape have been observed. However, Iacknowledge that these trails may have changed given the fact that today, the area is fenced; consequently there are restrictions in animal movements in Erongo.To obtain the data for this analysis, calculations were made of distance in meters from rock art sites to animal trails using QGIS. To achieve this, the distance calculations are given in 100 meters intervals, thus subdivided into six categories (Table 6.5) below to provide quantitative data.

Proximity Variables to Trails (m)	No. Of Rock Art sites (n=61)	% Of Rock Art Sites
0-100	32	53%
101-200	8	13%
201-300	4	7%
201-500	7	11%
501-1km	6	10%
>1.1km	4	5%

Table 6.5 Rock Art sites in relation to animal trails system (in red lines) and their proximity to springs (blue ovals)

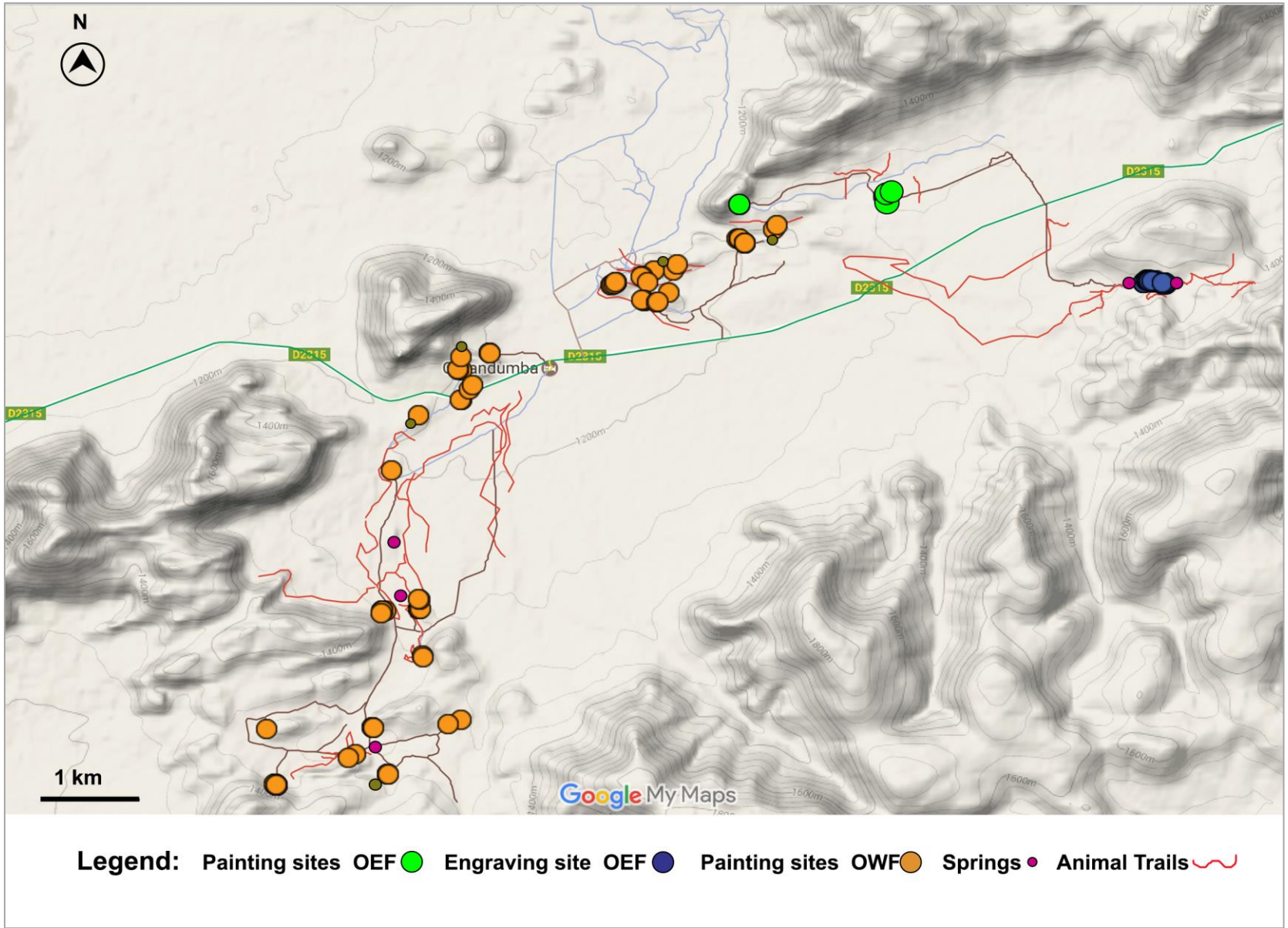


Figure 6.63 Presents animal trails system (in red lines) and their proximity to springs (blue ovals) in Omandumba East and West farms.

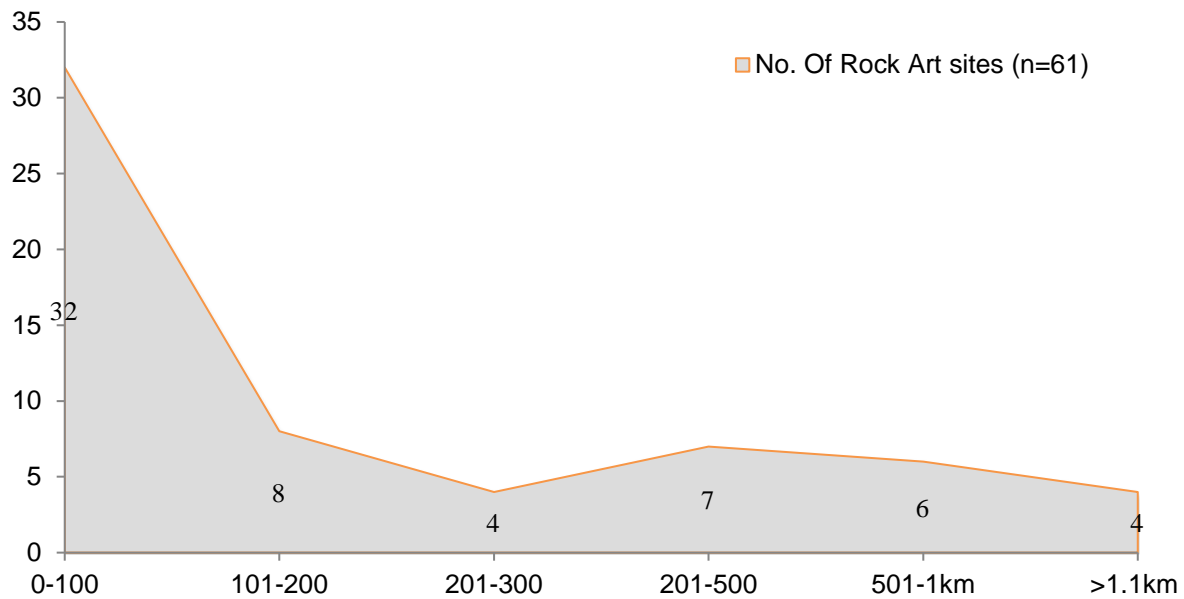


Figure 6.64 Stacked Area chart of rock art sites (paintings and engravings) in proximity to animal trails. (Left axis indicates the number of sites while bottom axis shows the distances of sites from trails).

The trails analysis shown in Figure 6.64 above indicates that the majority (53%) of rock art sites located near modern trails lie in 100 meters and these sites are located at the foot of the of imposing features (hills, kopje and outcrops) and have direct access to the valleys. Such sites have neighbouring site most of which are within 5-10 minutes reach. The majority of these sites are with few human traces in form of surface artefacts and rock paintings. Geomorphologically, these sites do not seem to be suitable for habitation due to the fact that they do not shelter. The fact that they are located along the natural travel routes suggests that they might have served as transportation conduit, temporary resting places where hunters would wait for animals at the permanent water points and ambush them or what Tilman Lenssen- Erz (LENSSSEN-ERZ 2004:145-46) term as ‘waymark sites’, under class A category. It is therefore possible that they are deliberately placed in proximity to trails as navigational strategies across the landscape to signal availability of food and water resources for traveling hunter-gatherers.

Moreover, about 8 (13%) rock art sites lie in 200 meters to modern trails, 4 (7%) were found within 3000m, 7 sites representing (11%) within 500m and 6 sites accounting (10%) were recoded within 1km reach from animal trails. Like sites in the previous category, the majority of these sites are slightly larger, with medium to high intensity of usage (many paintings and high surface collections), which suggests long-term site occupations. Furthermore, one of their advantages of these sites is the fact that they also have direct access to wider landscape

and other natural resources. They also have complex paintings most of which are highly visible within 15m ranges. Examples of such sites are OWF30, OWF39, OWF42, OWF50, and OWF52 among others. The last category of rock art sites are those occurring far from animal trails beyond 1.1km representing (5%) of sites. These sites are those located on top of the outcrops, hills and kopje, most of which do not have direct access to basic resources natural infrastructures but providing panoramic view of wider stretch of the landscape. The fact that they are secluded and located



Figure 6.65 Left is an animal trail leading towards one of the spring (right), which holds water during dry season, pictures taken in summer of 2015 in the Omandumba West Farm. Behind the spring are rock art sites.

i.Position and Accessibility of rock art sites

Another important landscape variable that this thesis investigated is the accessibility of the rock art sites in landscape. This was vital in order to understand how the landscape was organized, perceived and accessed by the prehistoric people the given their widely distribution and various locations they occupy in the landscape. Moreover, the researchers also wanted to know whether the variations of sites represent arrays of activities connected to the sites and their artworks in the landscape.

For this, we attempt to apply Richard Bradley (BRADLEY 1997) criteria while analysing the locations and content of Neolithic rock art of Atlantic of Western Europe. (BRADLEY 1997:6) distinguished between accessible and inaccessible to rock art sites. Accessible sites are defined by their communicative locations and position of rock art sites in the landscape i.e. proximity to natural resources (i.e. water, food and water), trails and also by the complex designs and compositions of figures in the landscape. Inaccessible sites are defined on the basis of their inaccessible locations in the landscape. Such sites are often having difficult access sometimes secluded and placed away (mostly on high topographical locations) from

other sites while their artworks equally enhance the intangible aspects of the sites. In order to achieve this, we categorized the sites according to the locations they occupy in the landscape on the basis of following: vantage points (1), narrow passages (2), terrace (3), rock outcrop (exposed) (4) and entrance to valley (5) as illustrated in (Table 6.6).

Position of site in the landscape	No. Of Sites (n=60)	% Of sites	Accessible/Restricted
Hill top (isolated, secluded)	5	8%	Restricted Access
Narrow Passage	7	12%	Accessible
Terrace (make or form (sloping land) into a number of level flat areas resembling a series of steps).	2	3%	Accessible
Rock outcrop (exposed)	14	23%	Accessible
Entrance to valleys/ Foot of imposing features/ Vantage Points	32	54%	Accessible

Table 6.6 The summary of accessible and restricted access to rock paintings sites in the landscape in relation to the position they occupy in the landscape.

The accessibility analysis indicated that only five sites attaining 20% ratio among all sites have restricted access. Accessing these sites is virtually challenging and some times necessitates strenuous hiking from the bottom of the hill and crawling on smooth granitic rocks (Fig. 6.65) to reach the sites. Given the odious nature of reaching them, it's likely that these sites were not regularly used or visited. The absence to very few traces of surface archaeological materials and sites' morphology suggests that the sites were not inhabited.

However, at Priests & Ostrich shelters, two small and large stone structures accumulate clustered near the sites were excavated by David Pleurdeau and his French team back in 2007 finds out weather the structures constitutes a burial ground but the structures did not recover any form of archaeological materials. In addition to their difficult access, characteristics of these sites also include the fact that they are isolated on high topographical location (above 1257m elevation), away off from the usual natural infrastructures (water and food) and far from the threshold of where everyday activities might have occurred. The sites are also with unusual depictions (of both human and animal figures associated with ritual activities (see Chapter 7).

Moreover, they also occupy vantage points – in sense that they provides panoramic view of wider stretch of the landscape and do not have direct access to basic resources. Examples of these sites include site OWF44, OWF45, OWF46, OWF47, OEF60 (see Fig.6.52; Fig. 6.53 as

well as Fig. 6.54) Artworks at the sites are placed at placed on locations such as ceilings ceiling of a cave or shelter also slanting ceiling down to about 50 cm above the ground of rock crevices and on boulders with restricted movements around.

This unique geographical location combined with the site settings and the type of artworks gives an impression that the sites serve as ‘sacred location’ where of activities associated with ritual and religious significances were performed hence their concentration is an indicative of a centralized of supernatural powers as its observed in many hunter gatherers landscapes in Southern Africa (see COULSON & CAMPBELL 2001 for illustrations). The topographical locations of these sites likely enhanced the power and significance of the sites in the landscape hence their placements landscape may have been a deliberate choice rather than a random act. Although these sites are located at impressive locations, they provide awkward viewing positions, through bending, squatting and sometimes laying on the ground and their visibility ratio is restricted to 1m ranges.



Figure 6.66 Shows the nature of hiking towards the restricted sites with difficult access in Omandumba West Farm. With me in these photos are my colleagues, Fousy Shinana and Maria Mwatondange.

The accessibility analysis had also indicates that 92% of all the sites in the study areas are accessible. These include sites that were recorded in locations such as narrow passages, which account for 7 sites representing 12% in the study. Sites under this category are found mainly in rock outcrops and the foot of hills and near conspicuous landscape features such as passages or saddles in the mountain with few human traces like rock art and artefacts. The artworks at these sites are positioned at narrow passage where either vertical walls or granite boulders are separated by narrow passages between 1-3.5m wide. Examples of such site OWF04, OWF06, OWF10, OWF18, OWF52, and OWF42 and site OWF53 (Fig. 6.67). These sites are easily accessible through hiking. The composition of figures at these sites varies and the majority of the artworks depicted at the sites show people moving in small or large groups bearing hunting equipments and long sticks. Other than rock art, these sites has few to zero

human traces in form of surface artefacts. But, if there were surface artefacts it is highly feasible that such artefacts would have been displaced through erosion actions (water or wind), or by animals or people.



Figure 6.67 Shows the nature accessible sites in Omandumba West Farm that occupies narrow passages. Image A, on the left is that of site OWF52b/ Beeswarm while image B on the right is site OWFF53, just immediately behind Tuba Rock.

Only two sites in the study were recorded on a terrace representing 3% and that is the Strey Wall/OWF11 and Strey Boulder/OWF12. The terrace hosting the boulder is quite steep but its slope is gradually descending down. The site is easily accessible but its artworks are positioned on an unreachable location that requires climbing or a use of a ladder (see Fig 6.66 left). It's likely that the site was not used regularly due to its rock formation and absence of surface archaeological materials but if there were surface artefacts, they might have been transported by erosion. Sites located on exposed rock outcrops (isolated rock outcrops) account for 23% and are equally accessible and have direct access to wider landscape and natural resources (see Fig.6.68 bottom). Some of sites under this description show evidence of occupations in form of various surface archaeological collections and are in proximity to water and trail within reasonable distances.

Similarly, are majority of those located at the foot of imposing features (Fig. 6.67 top) in the study areas that account for 37 sites representing 54% of the corpus. These sites are strewn over large expanses of fairly flat rocks at lower elevation, making them undoubtedly accessible. The sites act as entrance to the valleys and have direct access to wider landscape. They are located generally proximity to water sources in form of riviers and springs, near the trails and few of these show a strong evidence of site occupations i.e. Leopard Cave, Crown Boulder, Tuba Rock, OWF13, 27,OWF08, OWF15, OWF16, OWF17, OWF19, OWF20, OWF21 etc.



Figure 6.68 Shows various accessible sites. A, is the cluster of 5 sites (OWF50-OWF55) at the foot of a hill. Image B shows cluster of 3 sites (OWF19-OWF21) in a rock outcrop in the middle of the valley. All these sites have immediate access

j.Aspects/Orientation of Painted Sites

The cardinal orientations of the rock art sites in the study were also examined in relation to their location. This was important to establish whether such aspect may have been one of the influencing factors in the choice of sites locations in landscape. My observation of the sites' aspects was that the directional aspect of a site determined angle from which the audience access the sites, and view the artworks on the panels while the geomorphology of the rock dictate how the artworks can be viewed. For this analysis, I have therefore considered the following attributes namely: panels orientations and their geomorphological formations in order to understanding painters' selections of sites and generally how they interact with the

environment. Such evaluation did not produce significant statistical values between the two variables. However, it demonstrates that the direction in which rock art site or panel faces relate to the use of the rock art site and panel in the landscape. To determine the aspects of Omandumba rock art sites, I recorded the directional facings of all individual panels in the landscape in relation to the four cardinal directions. For this, the analysis produces some statistical values (Table. 6.68). It comprised of four Groups: A from 0° to 90° (north), B from 90° to 180° (east), C from 180° to 270° (south) and D from 270° to 360° (west).

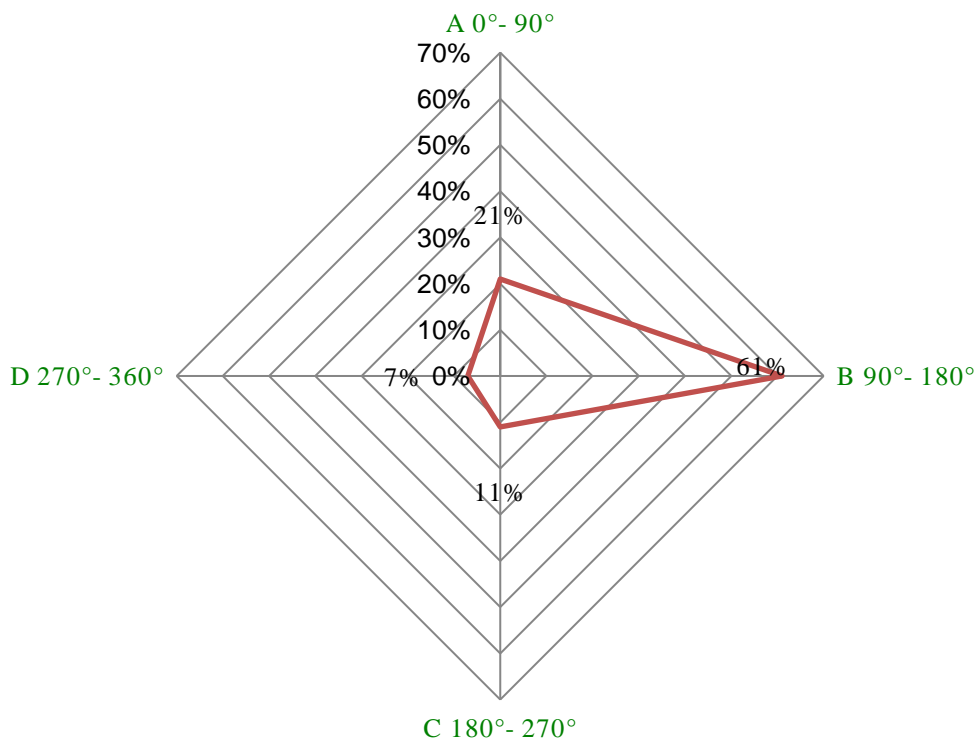


Figure 6.70 Panels Orientations of rock painting sites in the study areas: Omandumba East and West Farms

The orientation analysis above indicated a general tendency to orientate the sites/panels easterly in the landscape. The results indicate that painted panels oriented in Group B are prevalent and account for 61% of the corpus. Sites hosting these panels have the following characteristics: They tend to get more sun than others (however, they were only recorded in the late afternoon), and this explains why they are highly visible, but their artworks are slightly fading as a result of sun exposure and the majority have been painted on boulders. Their artworks are also highly visible from a great distance, especially during summer when vegetation is no concerns. The majority of sites hosting these panels are located in open landscape with direct access to natural resources and wider landscape.

Among these sites, there are those with two panels and usually, the first panel is oriented easterly (frequently the entry panel to the site) while the second panel is either found on the rear or back of the site (see Fig. 6.66 (A & B) of site OWF52b and OWF55- with different orientations. It is therefore possible that such sites were chosen deliberately to serve different functions for the painters. I have also observed that the geomorphology and climatic features of the Erongo area. Both Omandumba farms are located north most edge of Erongo Massif, and this is where the whole river system (Omaruru River) and its tributaries are flowing from. This meant a continuous availability of food and especially water resources. Hence, Erongo could have an ideal base biotope, used all year round unlike other rock art areas in Central Namibia such as Brandberg and Twyfelfontein - north of Erongo, where scarcity of water and grazing (animals) is more prominent as evidenced by the differences in biotope (RICHTER 1991). Hence, in the mobility patterns of both animals and Hunter-gatherers population, Erongo - particularly the northern edge, geographically where Omandumba farms lies was likely to be starting points for migratory movements of people and animals in order to take advantage of temporarily available resources. This may explain the distribution of rock art sites along these rivers, slopes and hills of Easterly aspects as shown in (Fig. 6.68). Suppose that hunter-gatherers migrations were prepared in the morning (to avoid heat exhaustion during long treks), it is possible that the painters may have chosen rocks with this orientation as an important navigational strategy to signal availability of water and other resources to other groups coming into this area because these locations were likely to be areas where groups would aggregate – for a range of activities within a variety of social and economic contexts.

In order to understand positioning in details, I had applied two motives towards the easterly orientation applied by Batarda Fernandes (FERNANDES 2010: 1-20) while analysing slope orientation of rock art sites of the Côa Valley in Portugal. Fernandes suggests that an easterly and southerly orientation of the slopes might be a result of a geomorphologic and environment constraints and a cultural factor. A geomorphological motivation is based on the fact that the majority of the sites especially those found on boulders have various degrees of surface exposures. The perfectly isolated rounded boulders are usually fully exposed by a variety of weathering processes, including sun and rains, making them susceptible to flaking, splitting and ultimately exfoliation.

In relation to our sites, this may explain why the majority of artworks at the panels are in a poor state of conservation and the fact that they were only possible to record either early in the morning before sun rise and very late afternoon when the sun set. However, it is likely that differences in weathering processes have resulted in the disappearance of some artworks (i.e. white and orange) from other aspects of the panels while boulders or rock shelters that are found in association with others are partially exposed hence artwork are visible from easterly aspect. The choice of pigments, coupled by the natural color of granite surfaces might have also played a role. For instance, if other pigment specifically white and light yellow were used at these panels, they might have faded completely given the fact that white and orange pigments were not recorded at most of the panels hosted at boulders. White pigment by physical necessity is coarser than other colours, and therefore prone to erosion, since if the pigment grains become smaller than they do not reflect the light fully and therefore the human eye would perceive the material as transparent. Today, the most preserved pigments among the painted artworks are the brown and red, which subsequently last longer than other pigments of artwork in the farms. A cultural motivation could be that the artworks are meant to be seen/viewed throughout the day since during late afternoon, the sun exposure is reduced hence their visibility ration become reduced as well. However, although this is based on current observation, it is possible that when colours were fresh, this may not have been a case.

The easterly aspects sites in Group B were followed by those found in Group A, with panels generally corresponding to northerly aspect 21%. Features that define these sites are: that the panels also receive the sun but only at certain time of the day (usually in the midday or late afternoon) hence they are slightly warmer. However, these sites are windier than others and this may explains why they were not preferred as habitation sites. Like most of the sites in Group A, panels with sites under this category are similarly found predominantly on granitic walls, ledges/sills and some boulders, in open landscape. In the study areas, these sites are not placed in close proximity to each other unlike those in Group A. They also tend to be a distance from natural resources such as water. Examples of these sites are: OWF07, OWF12, OWF17 and OWF56 among others.

Group C (southerly) panels accounts for 11% while Group D (westerly) represents only 7% of the painted panels. Following are some of the characteristics that define the sites since they share so many similarities: The sites receive very little to no sun, which explains why they are often colder. They are also often hidden, frequently found in rock crevices or fissures, shelters

and cave shelters - whose artworks are small, very detailed and can only be seen at close range, usually in squatting and sitting positions. Where artworks are larger, the sites geomorphology would equally dictate how person view the artworks through laying on the back or kneeling down prudently to avoid bumping the head on rock above the site. Few of these sites show strong evidence of habitation (i.e. at Leopard Cave/OWF42, Fackelträger shelter/OWF39b, Christian Shelter/OWF30 and Blackman shelter/OWF25). While the majority of these sites were not habited (i.e. Site OWF40; OWF05/Scherz's Fissure; OWF35; OWF43; OWF45, OWF46b;OWF47; Site OWF55 including others). They are also located away from natural resources since they are predominantly located either on high topographical locations (with difficult access) or lower elevations with direct access to wider landscape.

k. Visibility and Location of the rock art sites and their artworks

Another important landscape variable that was studied in Omandumba areas is the visibility and location analysis of the rock art sites and their artwork. It examines the optical ranges from which painting sites and their artworks are viewed in the landscape. Such analysis is important in order to understand at which distances the sites and their artworks were seen in the landscape and also to establish the use of the sites for 'private and public', evidence can be found through the physical aspects of the sites and their visibility ranges especially from water sources, trails and access routes in the landscape (WHITLEY 2011). For this, I applied a model developed and used by Tilman Lenssen-Erz while analysing the rock painting sites of Brandberg Mountain (LENSSSEN-ERZ 2004:138-140). Just as Lenssen-Erz's analysed, the visibility analysis of the rock painting sites and locations of the artworks of the painted sites in Omandumba farms have also been illustrated in (Fig. 6.71) and have been defined in (Table 6.7 and 6.8).

Subsequently, I then categorized the visibility ratio into four main classes according to the number of sites: up to 1m optical range to 3 m, up to 15 m and greater than 15 m ranges as obtained from the field research. For this analysis, I have taken into account the visibility obstructions caused by vegetation cover, seasonality and other ground realities.

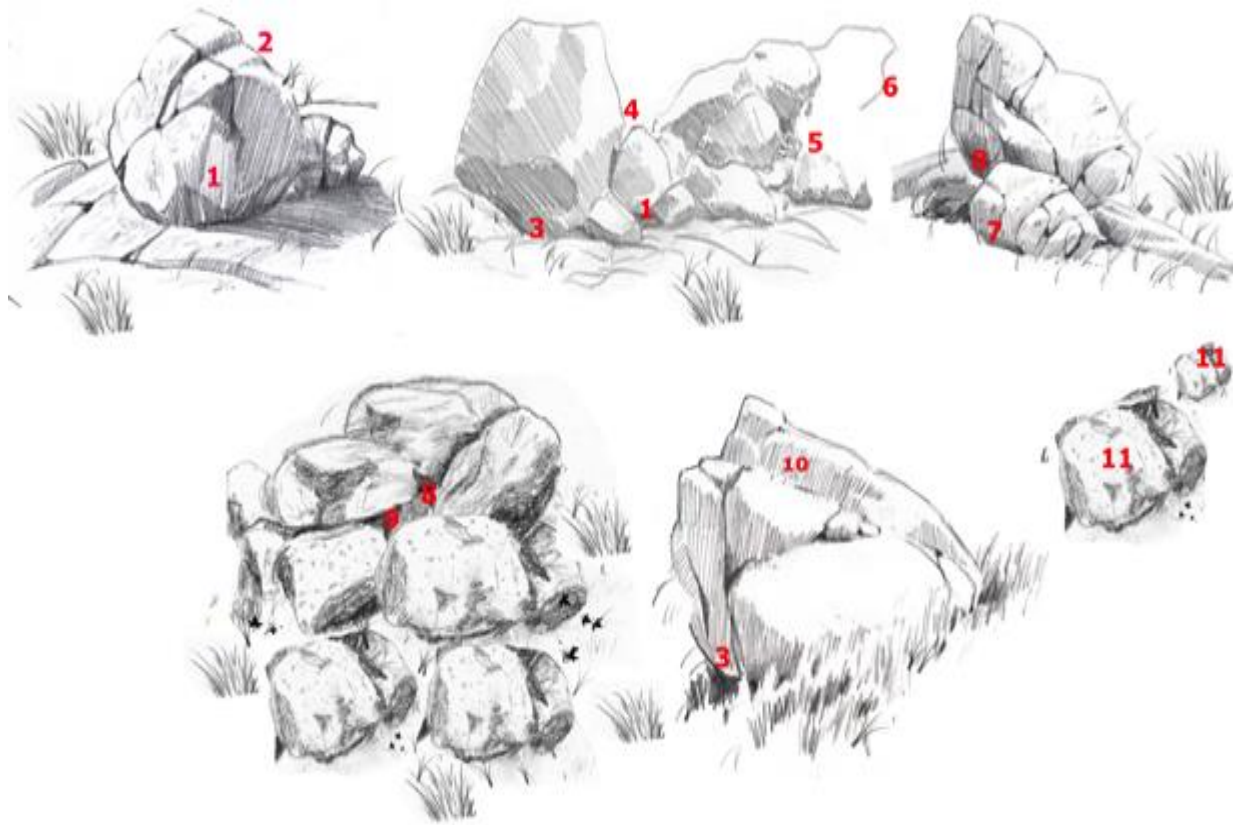


Figure 6.71 Shows the location of rock painting sites in Omandumba East and West farms. Original pencil drawings of boulders by (John Muir Laws- accessed on <http://johnmuirlaws.com/>).

Painting Location	Definition
1	On a perpendicular boulder without overhand
2	On a back of a boulder a boulder where painting location 1 is already occupied
3	Close to the ground on the real or the lowest section of a slanting ceiling of boulder, less than 60 cm
4	At the lip above a boulder or shelter
5	On a ceiling of a cave or shelter also slanting ceiling down to about 50 cm above the ground
6	On a perpendicular forehead of a rock above a boulder or a cave
7	Outside a shelter 'around the corner', the shelter being not visible from this spot
8	On the side wall inside a shelter, clearly no relation to the outside
9	In a ceiling of a rock crevice with an opening of less than 1 m
10	On a sill/ledge outside and above a boulder or shelter
11	On several boulders scattered over the site area

Table 6.7 Definitions for the paintings locations as illustrated in (Fig. 6.69), (After LENSSEN-ERZ 1989, cf. LENSSEN-ERZ 2004:138)

I then assessed the number of panels and the sum of figures seen at different visibility ranges as shown in (Table 2.8) below:

Visibility range (m)	No. Of Panels (n=70)	% Of Panels	Sum of Figures (n=1798)	% of Figures
1m	10	15%	436	24%
3m	19	26%	759	42%
15<	29	42%	381	21%
15>	12	17%	222	13%

Table 6.8 Visibility Range of rock painting panels according to number of figures.

The database search of the visibility analysis (Table 6.8) indicates that only 10 panels representing 15% containing 436 rock-painting figures are visible from 1m optical ranges. Such artworks are found on diverse panels occupying high topographical locations as well as few sites at low elevations. It is the same sites that are primarily secluded, isolated off and in concealed locations away from natural resources with to some extent difficult access. The majority of these are the faced southerly and westerly orientations. Examples of sites hosting the panels are (i.e. OWF12, OWF25, OWF45, OWF46/Ostrich Shelter/ OWF05 also Scherz Fissure, OWF55 and OEF57) in the landscape. Such sites do not serve as entrance sites to other sites in the landscape and the paintings are placed in these locations: 8 and 9, 10 (Fig. 6.7.1 and Table 6.7) for the meaning of such locations. With our study areas, examples of such sites with low visibility ration are: OWF4c, OWF14, OWF42 also Leopard Cave, OWF43, OWF54, OEF58, and OEF59 just to mention but few). According to (KECHAGIA 1995, 1996 *cf.* LENSSEN- ERZ 2004:140), sites viewed under 1m optical ranges can be classified as ‘very private’ mode of presentation where by they can only be viewed by one person at a time (Ibid, 2004:140). Most of the artworks at these panels are extremely small, very detailed and the majority were only retrieved through the application of DStretch application.

The visibility analysis of up to 3 m ranges account 18 (26%) panels containing the highest number of artworks 759 (42) viewed at that distances. Panels under this category are found in rock art sites located 2, 4, 5 and 7 (Fig. 6.7.1 & Table 6.7) for the definitions. Similar to previous sites, rock art sites hosting these panels also occupies several locations in the landscape. And many are placed largely on boulders, Wall and in rock shelters located slightly away (200m) from natural resources. Example of such sites in the study areas

includes Site OWF09/Porters Boulder, OWF10, OWF11, OWF12, OWF26a, OWF37, OWF48, OWF56/Elephant Wall and OEF58 and many others). These sites are also falling under 'private view' in sense that that are also small. However, unlike those found in restricted sites, sites hosting these panels can be viewed by more than two people at the site, often when someone is standing and squatting directly in front of them.

The third category is that of panels found up to 15 m distance ranges. They are the most dominant panels in the study, but with the third lowest most quantity of artworks. Here, 29 (42%) panels containing and excess of 381 (21%) rock painting figures were recorded. Paintings found at these panels under this category are also hosted on different panels/sites located in various locations in the landscape such as 1, 2, 5, 7, 8, 10 with few recorded at 11. Sites hosting these panels are quite spacious and provide ample room to manoeuvre around the sites. It's therefore possible that the artwork were viewed by large gathering of people. They can therefore be classified as 'public art', according to the binary classification by (KECHAGIA 1995, 1996 *cf.* LENSSEN- ERZ 2004:140), because they can be seen from a considerable distance. The same apply to those viewed at greater than 15 m ranges. They account for 12 (17%) of panels having 222 of (13%) sum of rock painting figures. Such artworks are found on panels hosted sites located at for instance location 1, 11 and to some extent location 2. Example of such panels in our study areas are the OWF39/Fackelträger shelter, OWF 52a, OEF57, OWF11 also Strey Wall and OWF46a. Some of these sites under this category provide have ample space for human habitation. However, there were instances where a panel hosts various clusters of figures and these clusters have varied visibility ranges. Such figures were incorporated in the sum of figures seen in such ranges i.e. those recorded at the Elephant Wall OWF56.

1.Placement of artworks on the rock surfaces

The Placement analysis investigated the exact placing of figures on the rock surfaces. This is because such placement largely influences the visibilities ranges of the artworks on the rock surfaces and generally in the landscape. As it is indicated in the visibility analysis, the majority of the artworks are viewed at less than 3m optical ranges, this was possible because the figures are often very small and the majority are placed close to the ground or the lowest section of a rock and ceilings and generally viewable when one is in squatting, laying on a back or sitting directly in front of the rock face. The analysis below demonstrates the position that painters preferred to place artworks.

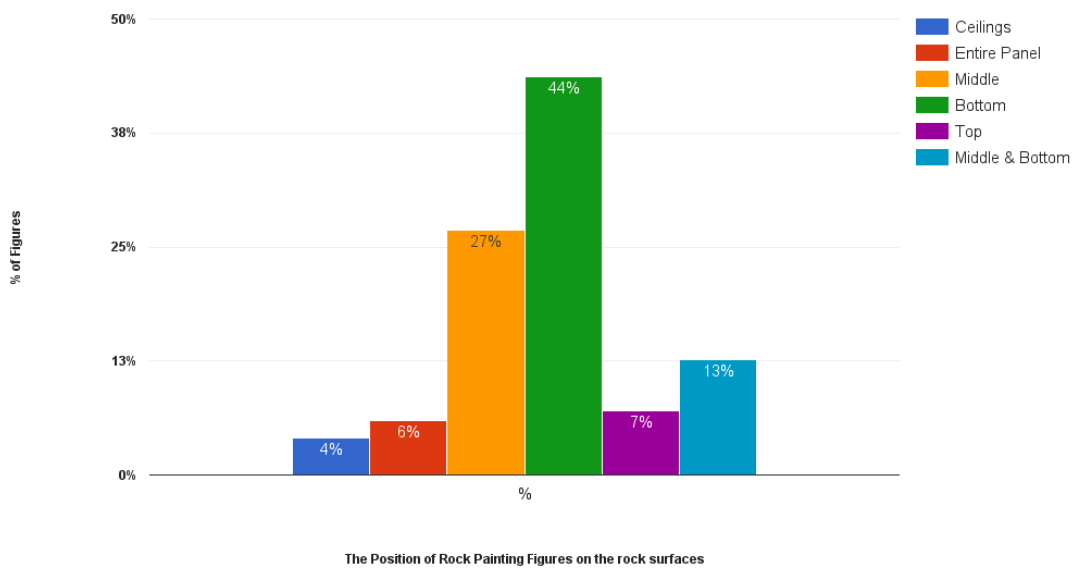


Figure 6.72 The positioning of the rock painting figures onto rock surfaces

As anticipated, the result of the placement analysis (Fig. 6.72) indicates that 44% of the artworks are placed at the bottom and lowest section of the rock surfaces (see fig. 6.2.8.2 for all illustrations - as an example). These are the same sites that have the lowest visibility between 1-3 m optical ranges in distance including those that are found on ceilings. These are followed by the artwork positioned in the middle of the rock surface, accounting to 27%, most of which are beyond 3m visibility ranges. Painted figures that is placed on top of the rock surfaces account for 7% in the repertoire. These are the sites that generally found on the ledges/sills and those found primarily at the lip above a boulder, shelter and cave shelter. The visibility range of these figures range is commonly in 15m ranges. There are instances where figures are clustered in the middle and bottom of the same rock surfaces. Such panels account for 14.1% in the repertoire.

The sites under this category are found predominantly on large horizontal Walls and on several boulders scattered in the landscape. Artworks positioned on the ceilings of a cave or shelter also slanting ceiling down to about 50 cm above the ground accounts for 5.6% while those that occupies the entire panels i.e. Crown Boulder also Site OWF52a account for 1.4% in the repertoire.

m. Summary of landscape Analyses

The spatial and statistical analyses of the rock art of the Omandumba East and West farms indicates that sites generally follow the natural geological and formation of the area. The general pattern of placement of the sites indicates that the majority of the artworks are hosted primarily on boulders, followed by those in rock shelters, granitic walls, caves, ledges, and ceilings as well as in Riverbed. Such sites are widely distributed across the landscape and occupy various locations in the landscape. The majority of the rock paintings sites are found at an elevation below 1318m mainly in the valley and few areas at high elevation while the rock engraving sites are occurring below 1361 meters above sea level. A high number of rock art sites lay in close proximity to non-perennial water sources such as rivers with all rock art sites found within less than a 1 km.

All the rock art sites also found in proximity to springs within 3km reach while the majorities are located far from natural pools while very few sites are found in proximity to water pools. This is because very few sites are located on top of the imposing features. Moreover, the rock painting sites faces predominantly eastern wards than any other direction. The majority of the sites were accessible without difficulties as they are located at the bottom of the imposing features while others prove to have restricted access. The majority of sites only visible within 1-3m ranges and the artworks at the sites can only be seen while one is either in a squatting, sitting or standing position directly in front of the rock face.

The variability in the visibility of the sites is generally influenced by a number of factors. These includes the size of the artworks (small or larger), the geomorphological setting (shape of the rock) of the site and its orientation in the landscape, surface color (colour of painted rock), the pigment color (artwork color), the locations of the site it occupies in the landscape, vegetation cover around the sites (seasonality) as well as the present conservation status of the painted surfaces etc. The analysis had also established that the size of the panel does not necessarily determine the quantity of the figures at the panel. There are instances where panels have room for many figures but only few are found, just as some panels are very small but the density of the figure is quite high, which suggests that the panels and their sites were chosen deliberately in as much as what the artist (s) chose what to depict and what not to and how many to place on each rock surfaces. Although inconclusive at this stage, it is possible that these landscape variables were influencing factors, although not necessarily the decisive factors to place the artworks on these surfaces.



“Its not just art, its more than that” Aixibs !Goe, 2015.

6.1.6.Part C: Rock Art Morphological Variables

Rock Art morphological variables present the total number of rock painting figures of site, analyses rock art elements and their typology, technique of productions, superimpositions/ overlapping, element counts, and surface archaeological artefacts present at the site/panel as well as conservation aspects of the sites.

a. Number of painted figures per site and panel

The dataset for rock paintings in Omandumba West Farm recorded a total of 56 rock-painting sites, comprising of 1637 individual rock art elements found on 64 panels while the systematic survey in Omandumba East Farm recorded 4 rock paintings sites containing a total of 161 artworks found on 5 panels which brings to the total of recorded painting sites in both areas to 60 and about 69 panels that hold an excess of 1798 paintings in total. Information on the number of figures per site and panel were obtained.

The first analysis in the morphological variables established the number of rock painting figures per site. The analysis reveals a wide range of figures per site from zero to a maximum 203 with the average number of figures per site standing at 30.4 as illustrated in the histogram (Fig. 6.73) below.

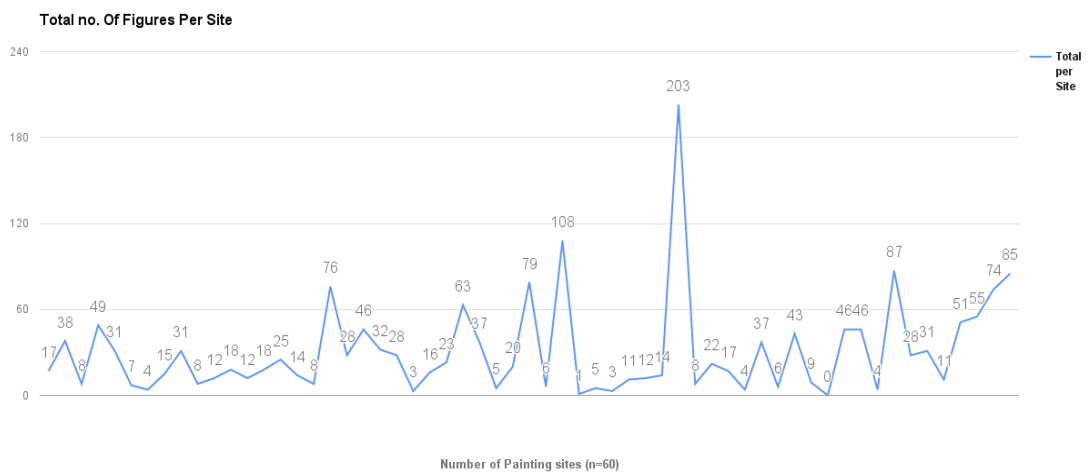


Figure 6.73 Shows the histogram of total number of rock painting figures per site in Omandumba East and West farms.

The second analysis in this category recognized the number of rock painted figures per panel. The results indicate the average number of figures per panel accounting at 26.05 with maximum values of 169 figures to a minimum number of 0 figures per panel (Fig. 6.74).

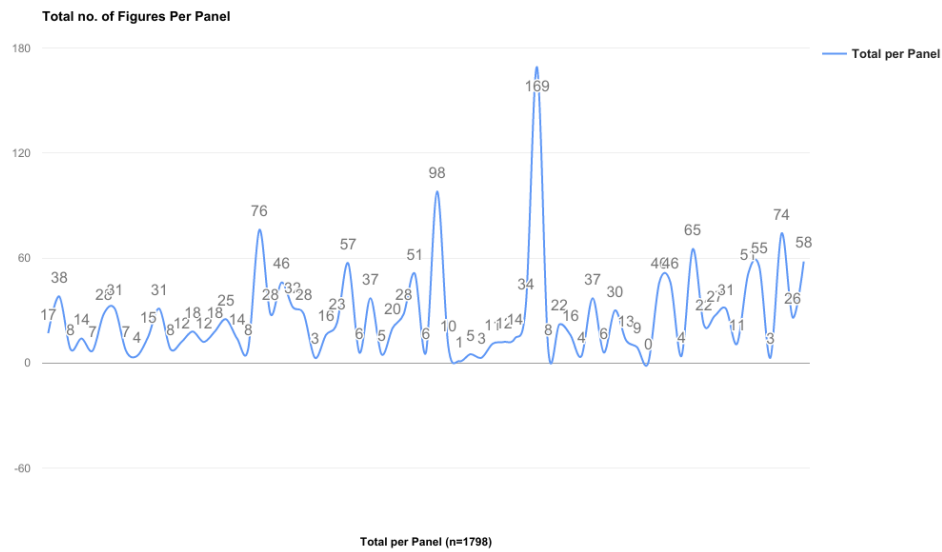


Figure 6.74 Present a histogram of total number of rock painting figures per Panel in Omandumba East and West farms.

b. Paintings prevalence in the study areas

The painting repertoire reflected in (Table 6.9) indicated at total of 1798-recorded painted figures. The category of zoomorphic representations is predominant and comprised a total of 893 individual elements representing 49.7% of the total elements. Following zoomorphism taxa is the anthropomorphic representations accounting for 509 representing 28.3%. The category of indeterminate accounts for 20.4% followed by the least category of abstract 0.9%, while the phytomorphic representations accounts for 0.9%. The last category is that of therianthropic figures, which accounts for 0,2%. Each category of the elements is presented below in details.

Elements	Omandumba East		Omandumba West		Total	
	Quantity	%	Quantity	%	Freq.	2%
Anthropomorphs	56	34%	453	27.6%	509	28.3%
Zoomorphs	62	35%	831	50.7%	893	49.7%
Therianthropes	2	1.2%	1	3%	3	0.20%
Phytomorphs	0	0	10	1.4%	10	0.5%
Abstract: Lineal, Dots & Circles	1	6%	15	2.3%	16	0.9%
Indeterminate	40	23.8%	327	15.4%	367	20.4%
TOTAL	161	100%	1637	100%	1798	100%

Table 6.9 Presents the summary of the total number of elements recorded in Omandumba Farms.

c.Morphology and Style of painted elements

c.1.Anthropomorphic Representations

In the painting repertoire, anthropic depiction are the second most dominant class of elements accounting 509 figures representing 28.3%. Among them, are those considered as generic human representations, i.e. those that contain only certain part of the human body such as head, legs and missing other recognizable features. Human figures vary in sizes and shapes with smallest measuring between 2.5cmx5cm to a larger one of about 105cm in size. In general, human figures often narrative, found in many scenes most of which seems to have been drawn upon social, economic and metaphoric content linked to everyday experiences(Fig. 6.75).



Figure 6.75 Various forms of human depictions in diverse scenes and postures. Top left, scene from the 'Priests' shelter/Site OWF 46, top right is a scene from 'Site OWF09, below is scene from Site OWF18.

Such depictions are very detailed, with individuals usually shown either in singly, pairs, in small groups consisting of four to ten or larger groups of individuals from eleven to over 40. Such depictions are engaged in social activities such as in hunting scenes, copulations scenes, dancing or in certain postures such as running, standing, sitting walking (Fig. 6.75) below shows some examples.

c.1.1.1. Gender Representations

Human record further indicates that men generally outnumbered women as reflected in (Fig. 6.76) below. The analyses indicate 67% of the total anthropomorphism account for men while women represent only 25.5% of the total. The least category is that of indeterminate human figures that account for 7.5%.

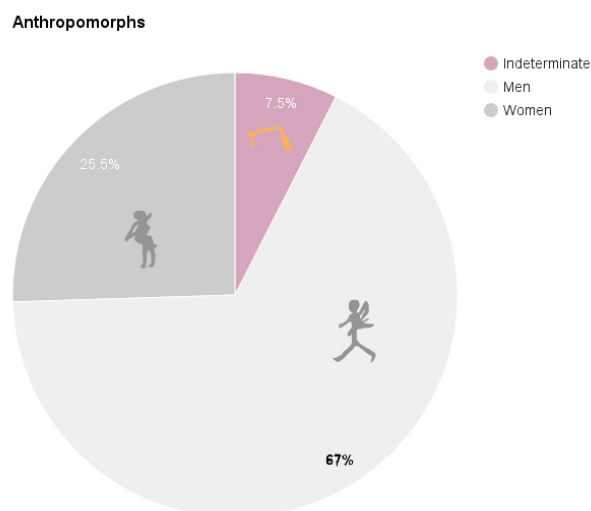


Figure 6.76 Gender representations of anthropomorphic elements in the study.

Men seldom-muscular features and frequently shown bearing weapons such as bow and arrows, quivers, large bags, containers and occasionally sticks. Furthermore, male figures are also depicted carrying what appear to be carouses or nets like objects in great details including what is likely to be folds of meat chunks around their arms (see Fig. 6.75 {top right} and Fig. 6.77). Male figures were recorded at almost every painting site in the study. Their representations range from 1 to more than 15 on average.

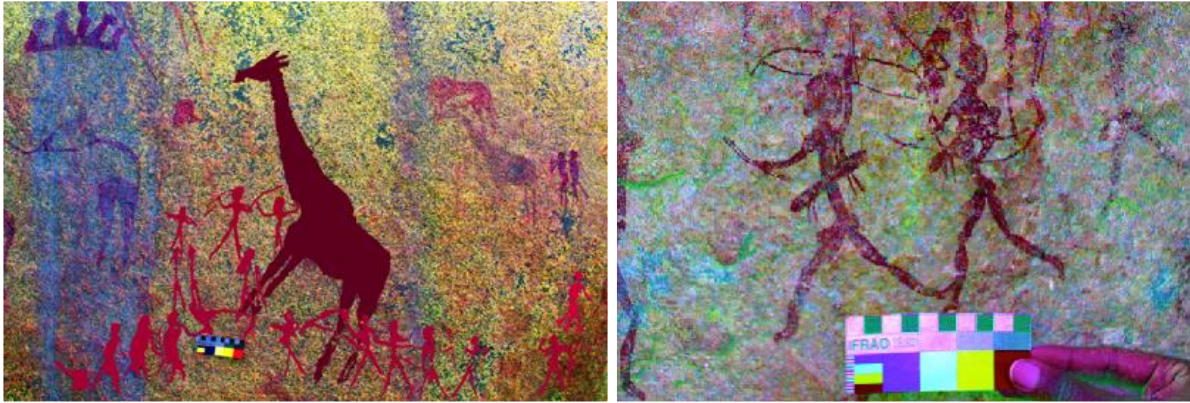
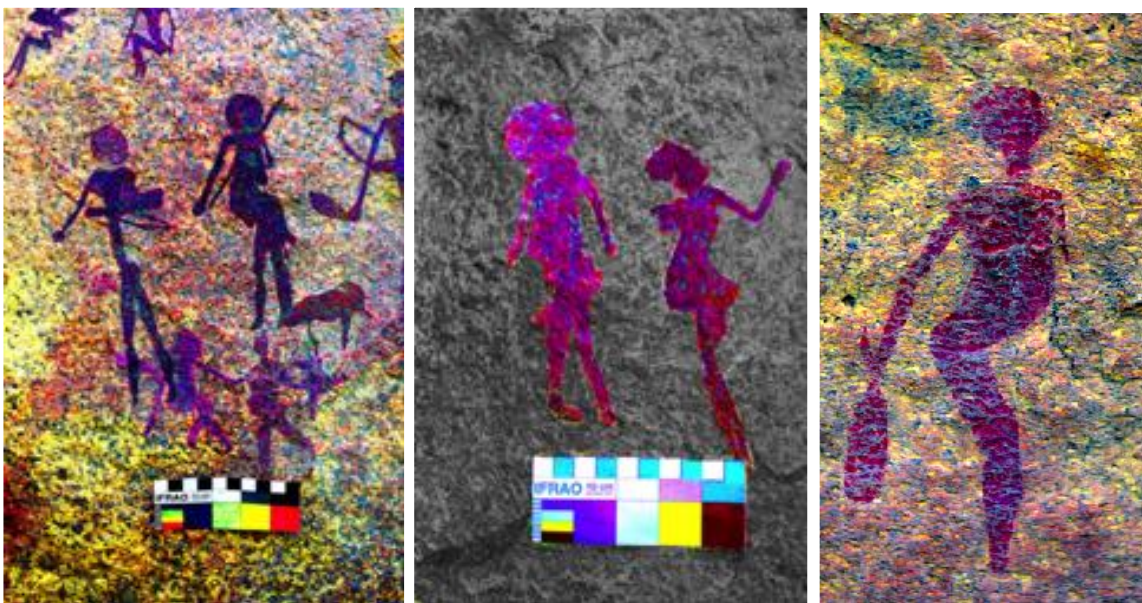


Figure 6.77 Left image shows men in a hunting scene at Crown Boulder/ Site OWF52a while the right image shows hunters bearing their hunting equipment at site OWF30.

Women on the other hand, form a small section of the bigger scope in the repertoire of human figures as oppose to their male counterparts. Thick thighs, large buttocks and bellies usually distinguish their bodies. Furthermore, they are frequently depicted walking and following their male counterpart part, either in pairs or smaller groups.

The majority of them are shown pregnant, carrying, sticks or holding hands with other women. In most of the scenes, women are shown in a variety of postures such as standing, walking, dancing, running, and sitting and in groups forming circle whereas some are depicted in copulation scenes. Other female figures are portrayed in bent postures and in scenes that have direct association with food procurement (see Fig. 6.78 bottom). The majority of sites hosting women figure are mainly walls, boulders and one shelter i.e. (OWF39b).



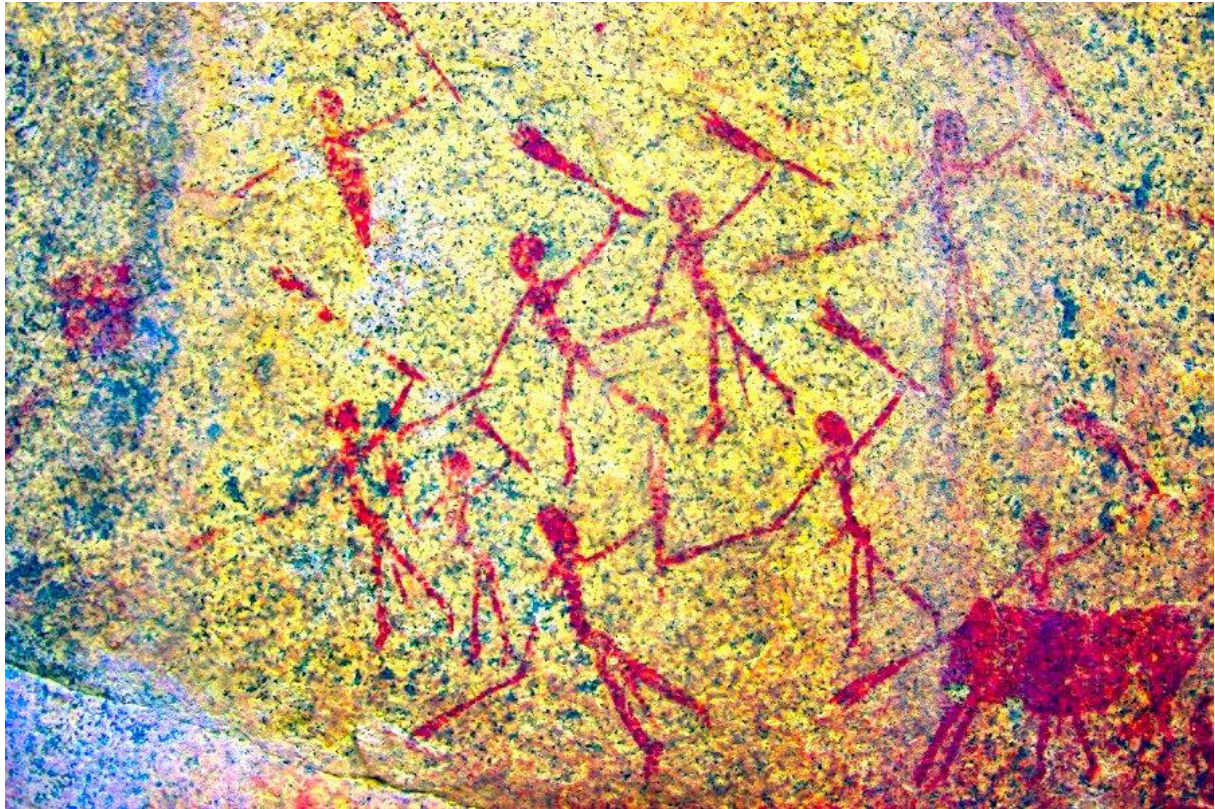


Figure 6.78 Top left image shows a scene of pregnant women with men carrying hunting weapons, figures from site OWF52a. Top right is another scene of a pregnant woman following a man with erect penis, scene from Site OWF56. Bottom is the eponymous scene from site OWF39b /Fackelträger Shelter showing women in motion.

Gender and identities of the human figures were determined based on physical morphology of the figures i.e. men's bodies are generally slender with flat bellies, small buttocks and broad shoulders. In most cases they are distinguishable by the objects they carries such as bows and arrows, quivers, bags and sticks and sometimes their genital organ i.e. erected penises. Features accentuate women physiques includes depictions of pregnancies, breasts, headdress while some are completed with clothes (skirts).

c.1.2. Indeterminate anthropomorphism

The indeterminate human forms comprised of all the depictions that can be identified as unambiguously human by their physical appearance, regardless of interpretations and whose gender is not indicated. Some figures of this typology are no longer complete due to poor preservation hence showing only few body parts while some appear complete but their physical morphology are not natural by proportion i.e. those portrayed in bend postures-bearing extremely slender limbs, elongated arms that bent backwards clearly not natural by proportion with their arms stretched out (Fig. 6.79 left) as well as those referred to as 'ghosts'

bearing long and oval heads, unnatural protracted body while their shoulder area emanate the arms (Fig 6.79 right) below.

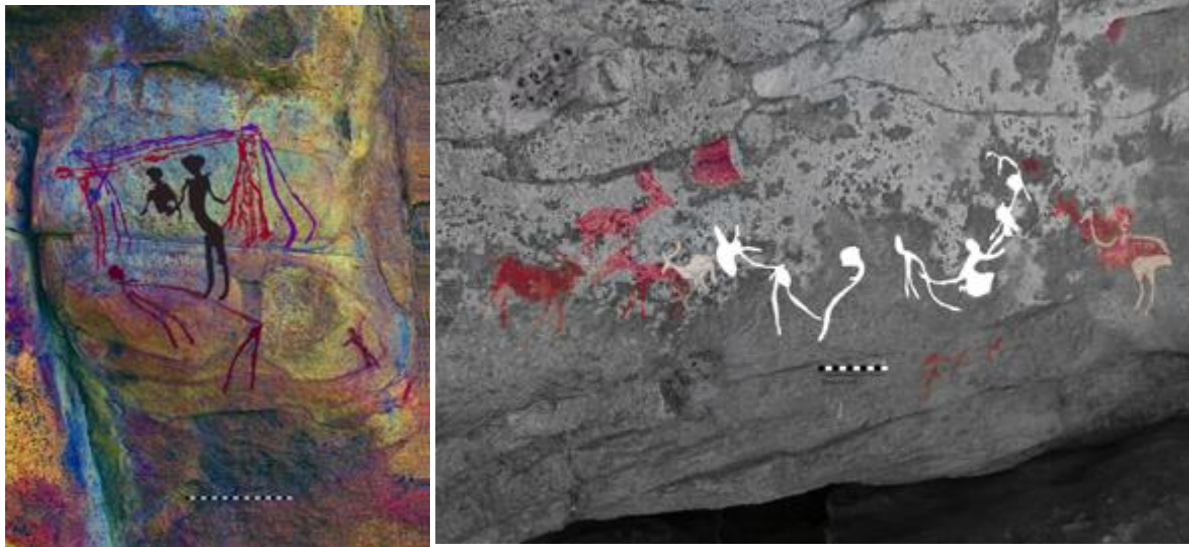


Figure 6.79 Are some of the indeterminate human figures in the repertoire. Left are the superimposed elongated human forms at Site OWF11 while right are some human forms (in white) also 'Ghosts' at Ghost Cave/Site OEF60b (see Site OEF60 for full description of the site and artworks).

c.2.Zoomorphic Depictions

The faunal taxa account for 893 depictions representing (49.7%) of the painting repertoire and making it the most dominant figures. The analyses revealed a wide range of individual animal species from as little as one to a maximum of 578 with the average figures of 33.07. The determinate category account for 315 (35.3%) figures (see Fig.6.80) includes only the figures that could be clearly identified as an animal, regardless of the species represented and the execution in technique used in the representation. This general category has been, in turn, subdivided into several groups based on the identification of the species represented.

The faunal taxon has a remarkable degree of naturalism with animals possessing unequivocal visual resemblance of the local faunal species found in the same environment today. Some species have been painted almost in repetitive styles, which makes it simpler identify them. Almost all the figures are painted in monochrome and very few polychrome figures. In the zoomorphic taxa, there is also a generic subtype of indeterminate with 578 depictions representing (64.7%) as seen in (Fig. 6.80). This group includes all animal figures that have the basic anatomical parts (head, torso and limbs) to include them in the zoomorphs depictions category but whose biological identifications were not possible due to lack of anatomical references caused by figures appearing either unfinished or as a result of conservation challenge.

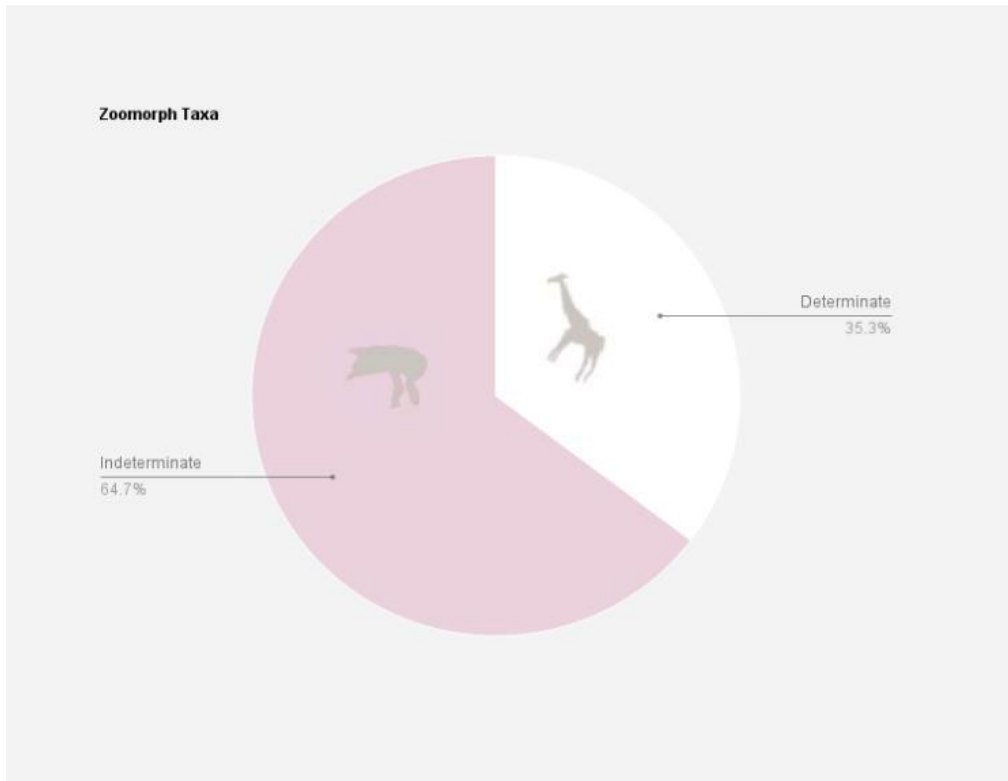


Figure 6.80 Indicates the total % of determinate and indeterminate zoomorphic taxa in the study.

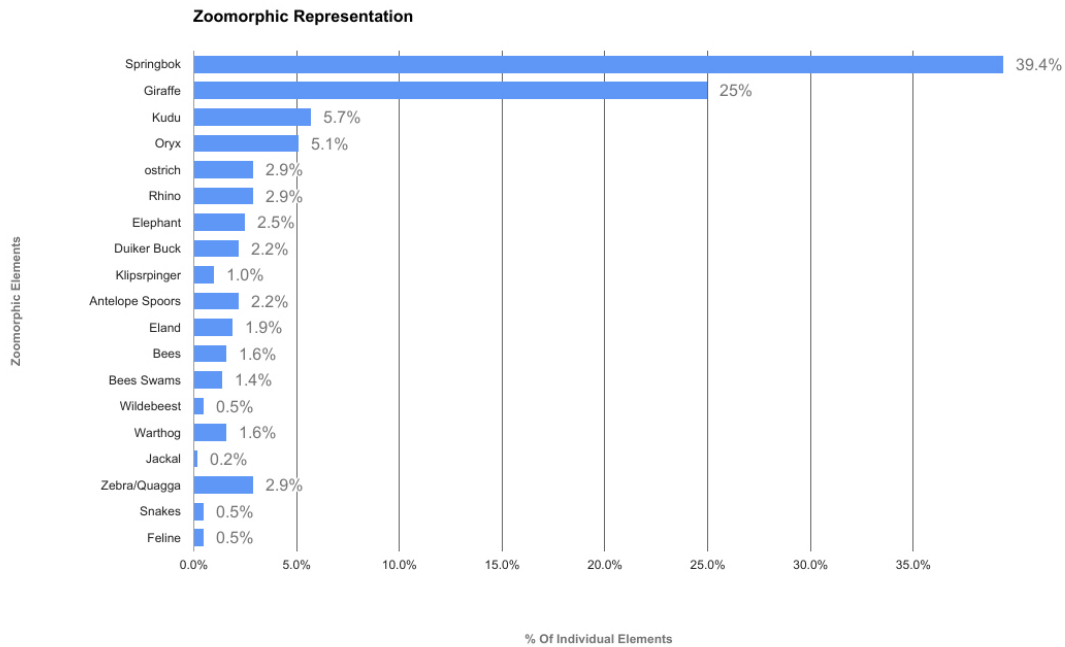


Figure 6.81 Top presents the percentage of individual species while bottom shows the percentages of each animal species represented in the study.

The analyses above indicate varieties of animal species, with springbok being the most dominant (39.4%) followed by the giraffe 25%. Following in springboks and giraffes in

quantity are kudu (5.7%), which is surprisingly high given their lowest representations in Namibia's rock art antiquity. Oryx depictions are also plenty, accounting (5.1%) in the repertoire, while ostrich, rhinos and zebra/quagga account for (2.9%) each. Elephant and bees account for (2.5%) in the study. Bees and bees' swarms are equally some of the least represented depictions in Namibia, and in the study, they account for (1.6% & 1.4%). Another unusual depictions in the Namibian rock painting antiquity are the antelope spoors, which accounts for (2.2%) in the study. Spoors in painting antiquity are extraordinary uncommon in Namibia hence, those recorded in Omandumba are likely to be the only existing record to date. Depictions of warthog account for (1.6%), while, klipspringer and duickerbuck figures represents (1%) and 2.2% in the study. The lowest record shows wildebeest, felines and snakes figures stands at (0.5%) each, while jackal repertoire recorded only (0.2%). Following the aforementioned criteria, (Fig. 6.79), below presents the variations of species recorded in the inventory beginning with the identified individual animal species.

c.2.1.Springboks (124)

The dominance of springbok in the study comes as no surprise; after all they are most depicted animal species in the painting antiquity of Namibia (LENSSSEN-ERZ 1997). In Omandumba sites, springbok is widely distributed, found almost at every painted site. They are rarely depicted in singly but always-in small or larger groups of their own herds. They are rarely superimposed on other depictions. As with most of the animals, the springbok depictions in the study varies but are always portrayed in a naturalistic manners, miming their living counterparts. However, at some sites, they are depicted headless and in some instances, their behavioural characteristics are also shown in figures. They are often depicted in motion, in herds (Fig. 6.82) while others are shown in static posture without any specific activity.

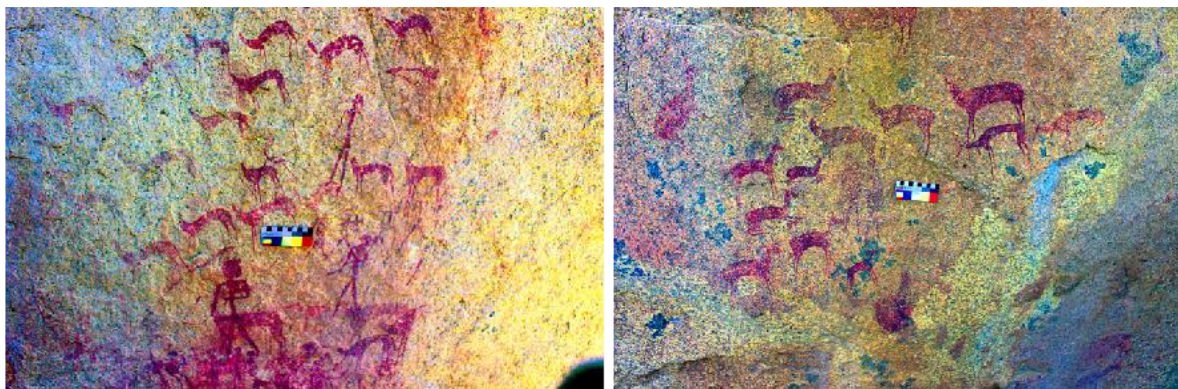


Figure 6.82 Shows springbok depictions. Left are springboks moving calmly towards left at OWF39b also Fackelträger Shelter while right are springboks in static posture without any specific activity at Site Christian Shelter also Site OWF30a.

c.2.2.Giraffes (78)

Giraffe is the second most quantitative species of animals in the zoomorphic taxa. Depictions of giraffe are quite common in the painting antiquity of Namibia (SCHERZ 1986). Giraffe have been identified as kind of a replacement of eland in the Southern African Rock Art (LEWIS-WILLIAMS; CHALLIS 2011) and is regarded as one of the as rain animals (OUZMAN 2010). Like the springbok, the giraffe is also found in many painted sites. Their depictions ranges from as little as one to six at most sites. The manner in which the giraffe are painted differs forms other animals and four identifiable styles (Fig. 6.83). Fully painted type: the most frequent type of the series includes depictions where the animal has been fully painted in monochrome (in brown, white and red pigments). Here the animal is very detailed, a clear duplications of its living counterpart where the artist (s) has exceeded a simple linear reference of the animal.

The artists may also incorporate the natural background of the rock surface complete the animal figure without pigment in fill to highlight certain part of the animal. In this case, the animal seen interacted not only with natural features in the rock surface but also with the rest of figures on that panel.

- Outlined: this type consists of fully outlined body of the animal whereby only its headline, neckline and backline were fully painted.
- Reduced giraffe: Where only the headline, neckline and backline are visible (in outline or in filled with paint). Here, the artists seemingly painted only the ‘distinguishable marks’. It is likely that those seemingly very reduced giraffe had bodies painted but faded.
- Pattern giraffe: a partially painted or fully painted giraffe in their distinctive spotted patterns. These figures are very limited in the study and recorded at two sites (bottom figure).

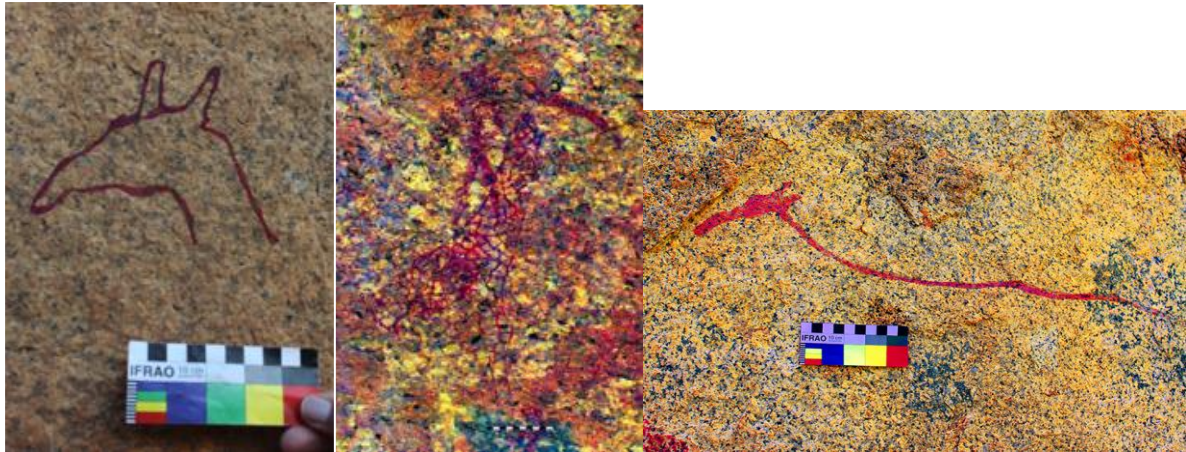


Figure 6.83 Shows varieties of painted giraffe depictions. Top left is a giraffe from site OWF56. Top middle is a patterned giraffe at OWF16 while the top right image is from site OWF52b. The bottom image shows fully painted giraffes from site OWF39b/ Fackelträger Shelter.

c.2.3.Kudus (18) and Oryx (16)

The great kudu is surprisingly the third most depicted animal figure in the animal repertoire. These depictions are also widely distributed and rarely placed more than two at the same site. Like most of the animals, they are all fully painted in red monochrome and often juxtaposition to very few human figures. Females are often depicted hornless with elaborate ears while males are shown with their long straight or wiggly horns (Fig. 6.84). In the study, kudu depictions are some of the very well preserved figures as they are often placed in unlike those placed at the bottom or edges of panels.



Figure 6.84 left is a female kudu at Site OWF07 while right is a male kudu at Site OWF06.

Depictions of oryx/gemsbok on the other hand are also documented at several sites in the study areas. They are frequently depicted in various scenes, most commonly among other animal figures. The majorities are painted in monochrome (red) pigment with an exception of that at site OWF12 (Fig. 6.85) in polychrome (red and white). Here, the artist used white paint to distinguish features of animal body such as its head and legs. The oryx here is shown being followed by two males- hunters bearing weapons while following another headless four-legged antelope, likely a springbok.



Figure 6.85 Shows the depiction of an Oryx in polychrome at site OWF12. The figure is described by (BREUIL 1960) as Nyala. This is cryptic since the nyala does not occur in Namibia naturally. Its region of distribution lies in south-eastern Africa in more humid biotopes. It is possible that some framers may have introduced some Nyala to Namibia, but we can reasonably exclude them from the prehistoric fauna of the region.

c.2.4.Ostrich (9) and Rhino (9)

A number of Ostriches were also recorded at various sites. They are often juxtaposition next to each other and (without superimposition) with other figures on the same panel while fully painted in red monochrome. Among this record, there is one exception of one recorded at site OEF60b also Ghost Cave (Fig. 6.86 left) have been painted exclusively in white pigment (while its belly has not been in filled with paint) and have been superimposed on a springbok figure painted in red monochrome. Rhinoceros have also equally recorded in many painting sites often, one at a site, with an exception of those two painted at site OWF46a also ‘Priest Shelter’. Like many other animals, rhinos have painted at least in two styles, outline and fully painted (Fig. 6.86 right). The fully painted rhino has been outlined first then in filled with paint. They are also subjected to superimposition at many sites including those seen in the following (Fig. 6.86 bottom) below.



Figure 6.86 left shows the superimposed white ostrich partially painted at Site OEF60b. The right image shows two types of rhinoceros in outline and fully painted at site OWF46a.

c.2.5.Elephant (8)

Elephant record is also high in the repertoire. They have been so far recorded at five sites with the study most of which are widely scattered across the landscape. Three have been painted on the same panel at site OEF60a (two small one and two larger one). Some of the elephant figures have been a subjected to superimpositions. However, they have all been painted in red monochrome. Those recorded at site OWF26a and OWF50 have been outlined first and then in-filled with the same paint. They are depicted in various postures such as foraging, trumpeting and standing. The sites where they elephants have been recorded have significant complex figures but these sites are located away from natural resources. These mega fauna are painted with a high degree of naturalism since all of their physical morphologies are clearly shown. In his studies in the Brandberg, (LENSSEN-ERZ 2001) have also noted many

superimpositions among the elephant figures, which also apply in Omandumba farms (Fig. 6.87) at site OEF60a. This indicates that they are likely to be the earliest artworks.

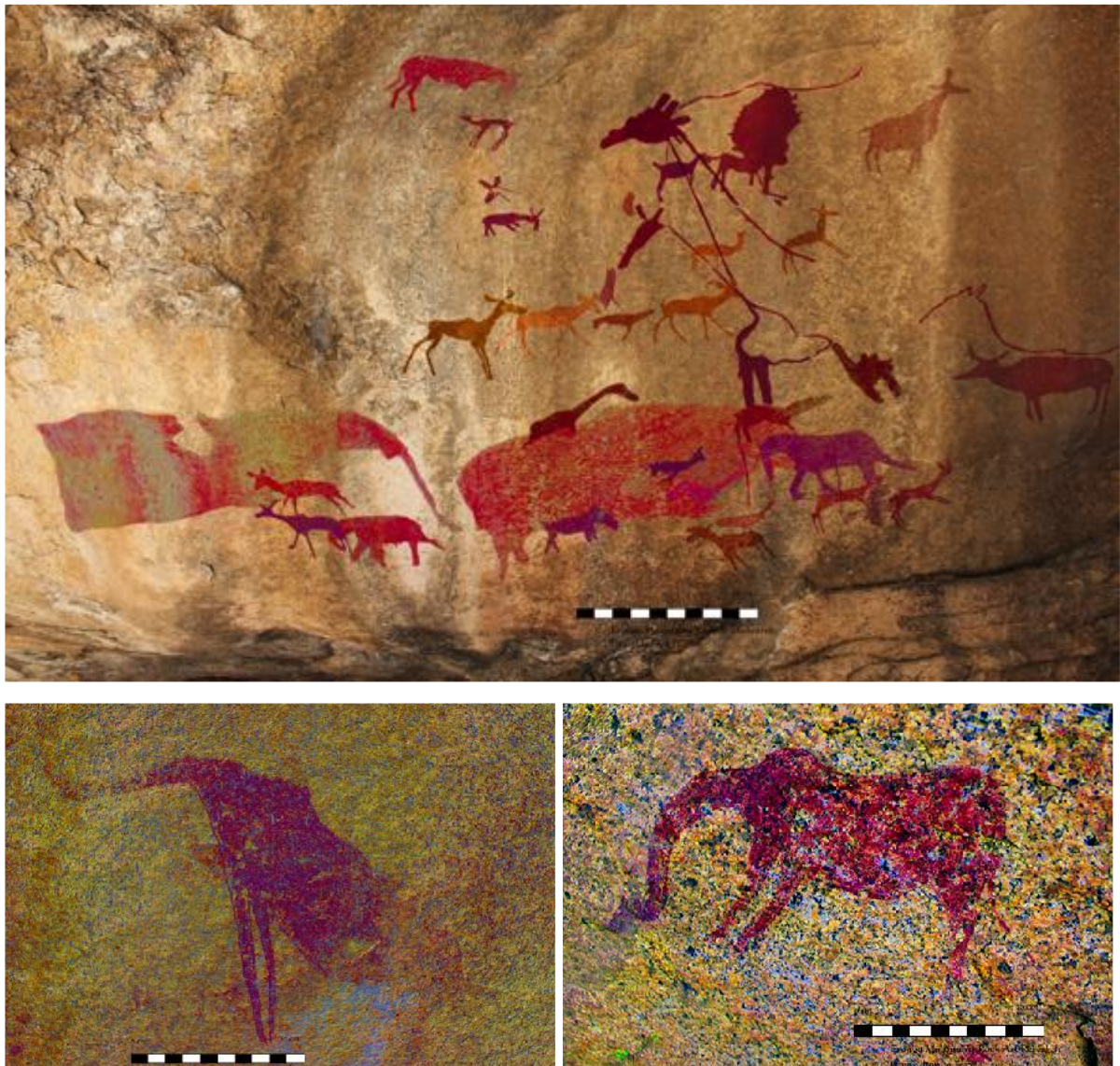


Figure 6.87 Shows varieties of elephant depictions in the study. The top images show depictions of four elephants at site OWF60a. The bottom left image shows an elephant drawn with its trunk raised, a behaviour often adopted when trumpeting or foraging. Figure recorded at site OWF50. The bottom right image shows another elephant figure at site Elephant Boulder/site OW26a.

c.2.6. Duiker buck (7) and Antelope Spoors (7)

Duiker bucks are some of the infrequent antelope species in the painting antiquity in Namibia. In the study, these small antelope species have been recorded at seven random sites mostly in Omandumba West farm. They have been painted predominantly in red monochrome (Fig. 6.88 top) and normally placed adjacent to other antelope species. No superimposition of this animal has been recorded so far in the study. Most of them appear to be in bad state of conservation. Animal spoors in rock paintings of Namibia are one of the infrequent

depictions. But in Omandumba West paintings records, I have recorded a total of 7 antelope spoors found at Site OWF08 juxtaposition with matching animal specie - springboks and oryx/gemsbok (Fig. 6.88 right). The spoors have rounded top and directed side by side upwards on the panel. Even though these ‘spoors’ are not depicted in sequential rows as animal produces them on the ground, they share similar traits like some of those depicted at the engraving site in Omandumba East farm (site OEF61). If they are really spoors, such representation is a rarity occurrence in the antiquity of the Namibian rock paintings unlike the high records in the engraving antiquity.

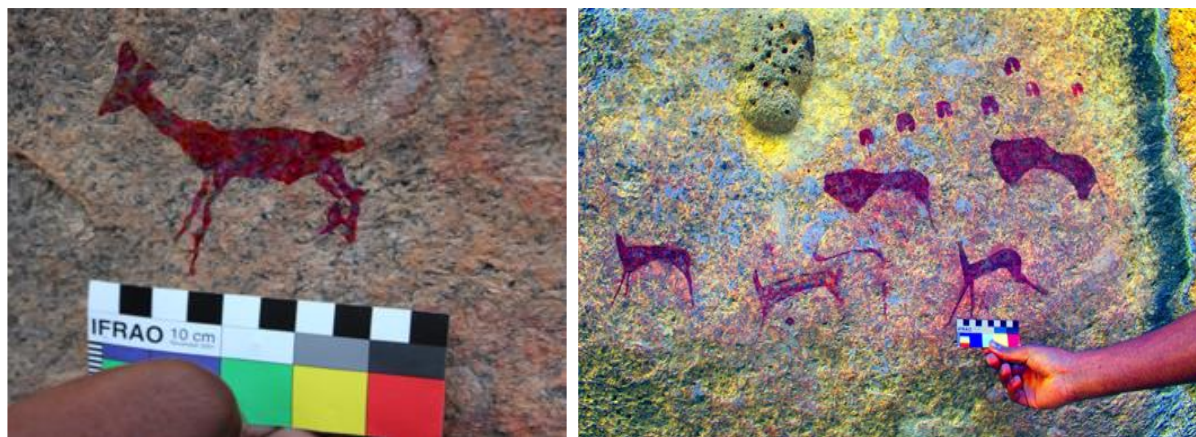


Figure 6.88 Left image shows one of a duiker buck at Site OWF21 while the right image shows antelope “spoors” prints juxtaposition to springboks and oryx figures at site OWF08.

c.2.7.Bees (5) and Bees Swarms (4)

A surprisingly high number of bees and bee swarms have been recorded in Omandumba West farm in the immediate distance to each other. Bees’ depictions are painted in details with their well-shaped torsos and wings clearly shown. Some of the bees have been juxtaposition next to the bee swarms (Fig. 6.89) while some have been placed adjacent to trees and human figures. Furthermore, these depictions are placed at sites where wild bees’ nests are found in the immediate site’s surroundings. For instance at site OWF54, bees’ nests are located on the granite cavity of same boulder containing the bee swam while at site OWF52b, bee nests are found on the tree leaning on the painted boulder. All the bees and bees’ swarms are painted in red and brown monochrome.

The bees’ swarms have a zigzag or wavelike pattern and are made of little brushstrokes/ dots or tiny red crosses that defines the swarms’ patterns. With the exception of site OWF30, all other bees’ depictions are found in secluded sites with no evidence of human habitation. They are also some of the well-preserved artworks in the study.

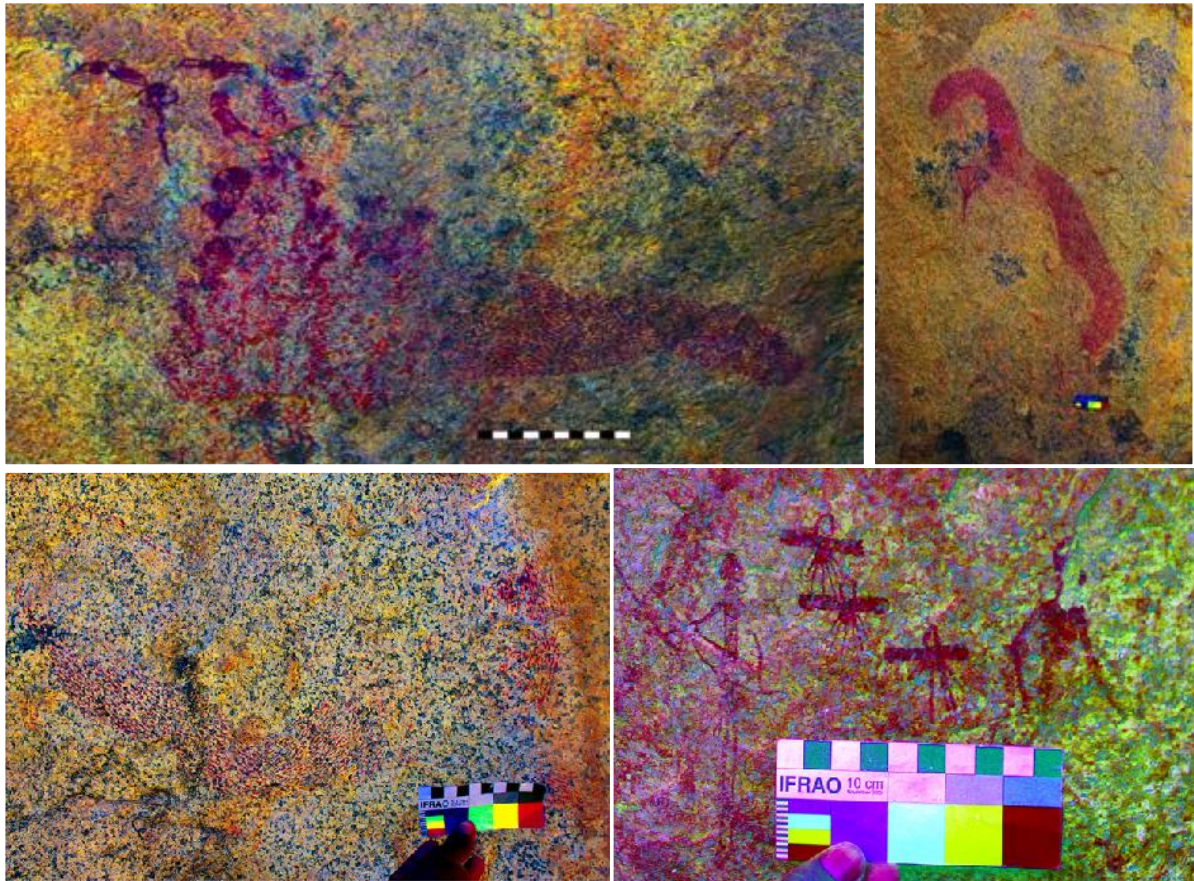


Figure 6.89 Shows various bees and bees' swarms depictions in the study. The top two images show bees' and bees' swarms at site OWF52b. The bottom image shows a wave-like structure of bees' swarms at site OWF54 while the bottom right image shows three depictions of bees at site OWF30.

c.2.8.Eland (6), Zebra/quagga (9) and Wildebeest (2)

Eland figures in the faunal repertoire account for 6 depictions in the study. These large antelopes are some of the least represented bovid in the study. These depictions have been recorded only at two sites in Omandumba West farm, namely site OWF52 and OWF56. These sites are secluded, with no evidence of habitations as attested by lack of surface artefacts. All eland depictions have also been superposed – 2 on one elephant and 2 by the springbok's figures both of which have been painted exclusively in black monochrome while partially drawn (Fig. 6.90 top images) at site OWF56. The other two elands' depictions were recorded at the third cluster immediately beneath the previous elands at site OWF52a (Fig. 6.90 bottom). Here, these depictions are painted in brown and pale red colour.

The male bull (in brown) has been superimposed on a small partially outlined eland just immediately on top of it with a feline figure in its mouth. This eland figure has been outlined with strong emphasis on its neckline and interior of its hind legs. All these depictions are well preserved.

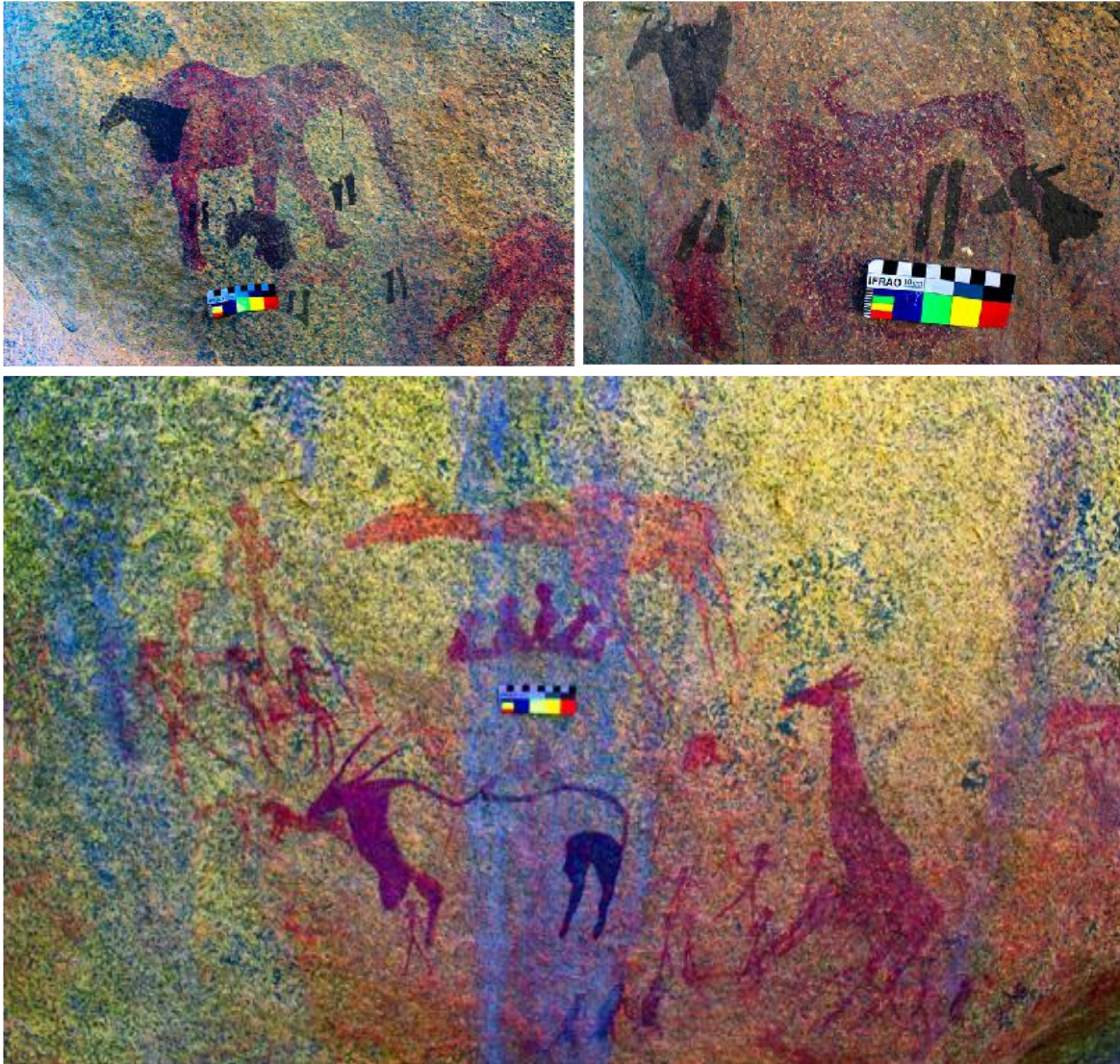


Figure 6.90 Top right & left images shows eland's depictions in black monochrome superimposed on and by other animal figures at site OWF56. The bottom image shows an outlined eland in red monochrome at site OWF52a.

Zebra/quagga figures on the other hand are also some of the well-preserved figures in the study. Quagga were particularly difficult to identify because of their similarity to zebras. These equids figures were only recorded at four sites, at OWF30, OWF33, OWF40 and OEF60. What was surprising about them is the fact that all these depictions are recurrently placed on top of other animal figures (see Fig. 6.91 top {arrow} & Fig. 6.87 top). All of them are fully painted in red monochrome and no differences were made to show the distinguishing striped markings but were drawn naturalistically. Wildebeest's depictions have also been painted in the similar styles as eland depictions. Having their bodies either fully outlined with single line or partially outline while their hooves and the interior of its neckline has been reemphasized with paint (Fig. 6.91). Like the eland, the wildebeest have all been

superimposed on other figures (human/animals) most of which are painted in pale red. However, they are exclusively found in rock shelters i.e. at OWF49 and OWF25.



Figure 6.91 The image to the left shows a zebra figure on top of the springboks depictions at Christian Shelter, site OWF30a while the right figure is that of an outlined figure of a wildebeest at Site OWF49 also Seal Shelter.

c.2.9. Warthog (5), Klipspringer (3) and Jackal (1)

Other animal depictions whose distributions are in limited quantity includes warthogs mainly found at four sites, fully painted in red monochrome, as shown in (Fig. 6.92 left), quagga all of which have been fully painted in brown and placed particularly on top of other figures are observed among zebras. One small jackal recorded at Site OWF39b. Most of these animal figures are painted with particular details and degree of naturalism for example, having their mouths, ears, horns, tails, legs, sometimes even their sexual organs clearly shown.

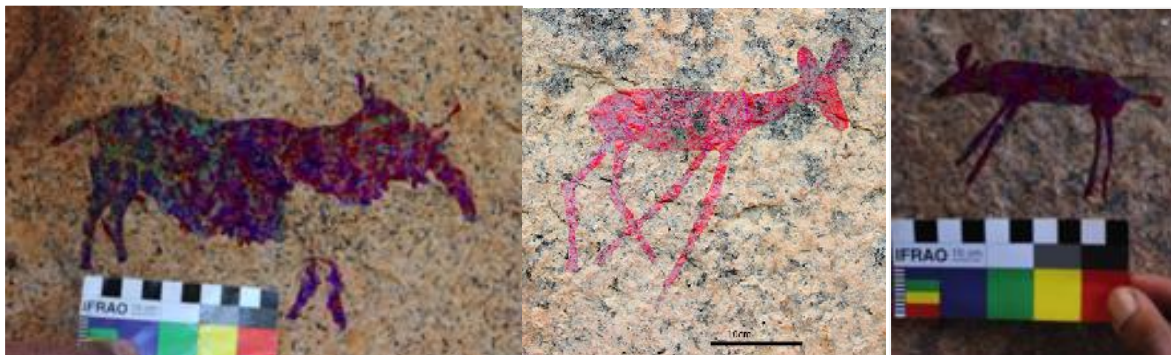


Figure 6.92 Left image shows a depiction of a warthog, partially exfoliated from Site OWF41. The middle image shows a klipspringer figure at site OWF31. The right image shows an identified by the local San men as a jackal figure at OWF39b.

c.2.10. Felines (2) and Snake (2)

Two feline figures mostly likely lions were also recorded at two sites, Site OWF52a and OEF60a in the study. At Crown boulder, the feline is shown immediately beneath an eland mouth (see Fig. 6.90) where else at Ghost Cave, a lion species is not easily identifiable

because of the animal being depicted as standing behind a treelike plant, hiding its forepart (Fig. 6.93 left).

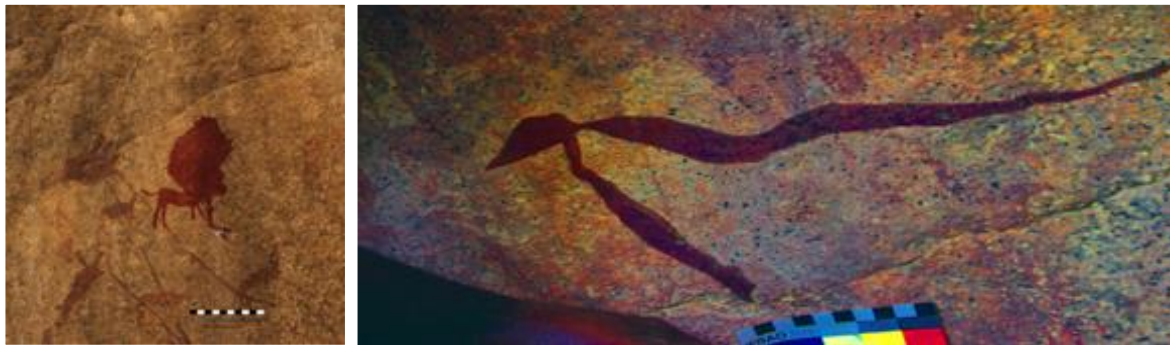


Figure 6.93 Left, is a depiction of a lion at Site OEF60a, right, is a depiction a snake with two bodies and one head from Site OWF49.

The felines are fully painted in red with elongated bodies, bent backline and slightly curved tail. Their paws are not clearly shown but their legs are well finished. Two large snakes have been recorded both in Omandumba West farm, at Site OWF45 and at Site OWF49. The snakes are quite strange in a sense that they have painted in complete two different styles. The one at Site OWF45 has been painted in outline without in fill. Its head is clearly shown, but it is fairly long with winding body having three springboks inside at the end of its tail that seems to emerge from it. It was particularly difficult to photograph because its placed between a small crack. The second snake at Site OWF49 has two bodies but with one head. It has been fully painted with its body in filled with red monochrome paint.

c.2.11. Indeterminate Zoomorphism (578)

The majority of figures in this category have basic inferences (head, torso and limbs) to incorporate them in the taxonomically class of indeterminate zoomorphic category, but lack the anatomical diagnostic features required to establish their identities. Some of these figures are complete; still their identity could not be established. Most of them were once complete figures but have faded as a result of various deteriorations dynamics i.e. natural and human induced actions. In some cases, dust generated by human and animals obscure figures while organic acids secreted by rainwater, animal (rock dassies) urines and other growths had also slowly altered the surface of the rock, which then becomes weathered and making it difficult to identify the figures. Where else, other figures were severely obscured by wasps with only certain parts of them are exposed while some have been partially exfoliated.

There are also many instances where figures are so heavily superimposed with the same pigment that it became challenging to establish the identity of the animal. Some figures are in excellent condition but their identity could not be firmly established. This is a case with a zoomorphic depiction of what likely to be animal skin hides in outline at site OWF41 (Fig. 6.94 {bottom right}). The figures are seemingly skinned animal with their hind legs wide spread apart and stretched to dry. (Fig. 6.94) below presents some of the said examples from various sites in the study.

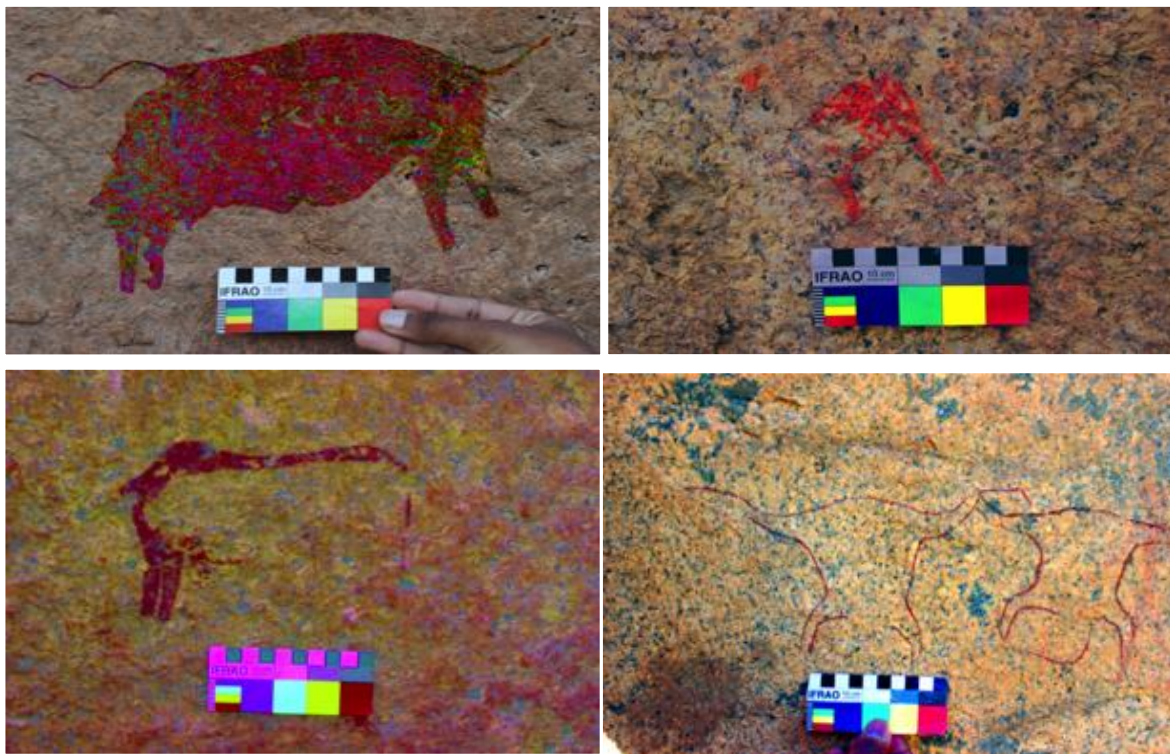


Figure 6.94 Shows some of the indeterminate zoomorphic depictions in the study areas. Top left is one of the indeterminate figure showing most likely two animal figures at Site OWF30. Top right is one of a small animal partially exfoliated at Site

c.3. Therianthrope Representations (3)

About three depictions of therianthropes (part-human and part animal figures) were recorded in the painting repertoire. Two were recorded in OEF Site OEF 59 also “Die Kudu Boulder” while one in OWF47 also “Ostrich Shelter (Fig.6.93). The first two therianthropes have been placed on top of another. They are shown with long legs, long tails, in a crawling posture and with physical traits as described by (BÖRNER 2013:103) similar to that of a kudu i.e. elaborated broad ears with the exception of their tails (Fig.6.95 left). The figure at the bottom appears to be holding a bundle of three or more sticks or probably arrows as one of the sticks has a sharp pointy end. Immediately in front of the beneath therianthrope is an outlined figure

of kudu (probably a female kudu as it hornless with swollen tummy) whose head is intertwined with the therianthrope. The third last therianthrope is a running human figure with elephant characteristics, namely trunk, large round ears, and large clumpy feet recorded at the ‘Ostrich Shelter’ (Fig. 6.95 right). A similar reference is found in Twyfelfontein, where an ostrich was engraved on the ceiling of a narrow fissure of the palms (KINAHAN 2010:45).

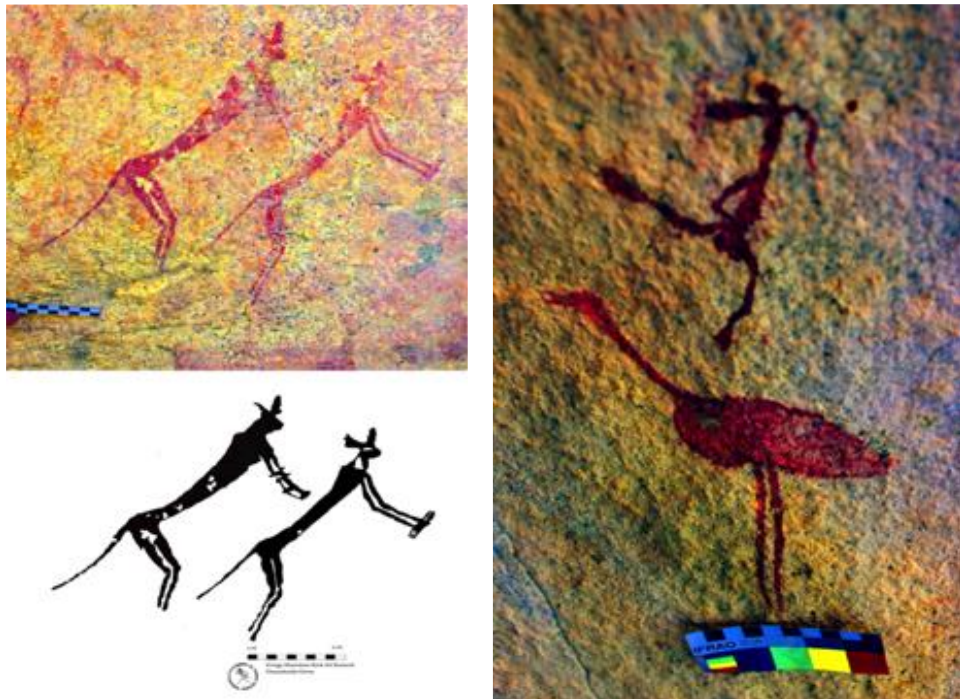


Figure 6.95 Left are two Kudutherianthrope figures at “Die Kudu’ Boulder. Right, is the Ostrich figure next to an elephant therianthrope. All DStretched images in middle are at 10 LDS scale.

c.4. Phytomorphs Depictions (10)

Arboreal depictions in Southern African rock art are some of the least represented depictions unlike their animal and human counterpart (MGUNI 2009). In Namibia, very few record of them have been reported scattered at few sites in the Brandberg Namibia, according to (MASON 1958, 357–368; LENSSEN-ERZ 2001, 1996), which account for ca. 0.15% of figures. In the painting repertoire, I have recorded approximately 10 (1.4%) tree depictions representing a specie of what appear to be quiver tree⁶ (*Aloe Dichotoma*) found at three rock

⁶ The Quiver tree also “Choje” in San language; is a an over dwarf shrubs distinct member of succulent plant of aloes indigenous to Southern Africa and particularly endemic in Namib desert, also found in Omandumba Farms trees were given their common name quiver in the 17th century when San people of Southern Africa were seen to fashioning quivers for the production of strings, quiver container and carve their arrow from the soft, pulpy branches of this tree.

sites with Omandumba West farm Fackelträger/ OWF39b, Tuba Rock/ OWF50 and Bees' Swarms Boulder/OWF52b) see (Fig. 6.94).

It is possible that the depicted is indeed that of a quiver tree, which is still found in the same terrains today as (DEACON & LANCASTER 1988; MIGOÑ & GOUDIE 2000) stressed that the environment reasonably remained unchanged in Namibia throughout Holocene period. The phytomorphic figures have been painted in red and brown monochrome. They are shown with their branches but without tree roots. Those recorded at Tuba Rock have also been juxtaposition near logs. Eight of these depictions have subjected to superimpositions; more especially they are juxtaposition ironically close to the giraffe's figures. The inclusion of such subject matter occupies a unique position in hunter-gatherer given the importance of the Quiver trees.





Figure 6.96 Top image shows various tree and tree logs' depictions at Tuba Rock/site OWF50. The bottom image to the left shows a small tree at site OWF52b, the middle image present the largest tree depiction at Fackelträger Shelter/site OWF39b while on the right is another tree depiction from Site OEF60a. All images have been DStretched at 10 LDS scales.

c.5.Abstract: Lineal, Circles& Dots Depictions (16)

Abstract representations accounted for 2.3% in the record. They include series of common abstract elements in rock art paintings including outlined lineal straight, simple, double, curved, irregular) and dots and circles designs (Fig. 6.97).These depictions are widely distributed and have been recorded at many sites. Some are with contexts while many without contextual knowledge proved challenging to decipher what they might represent although their deliberate placement and arrangement have meanings.

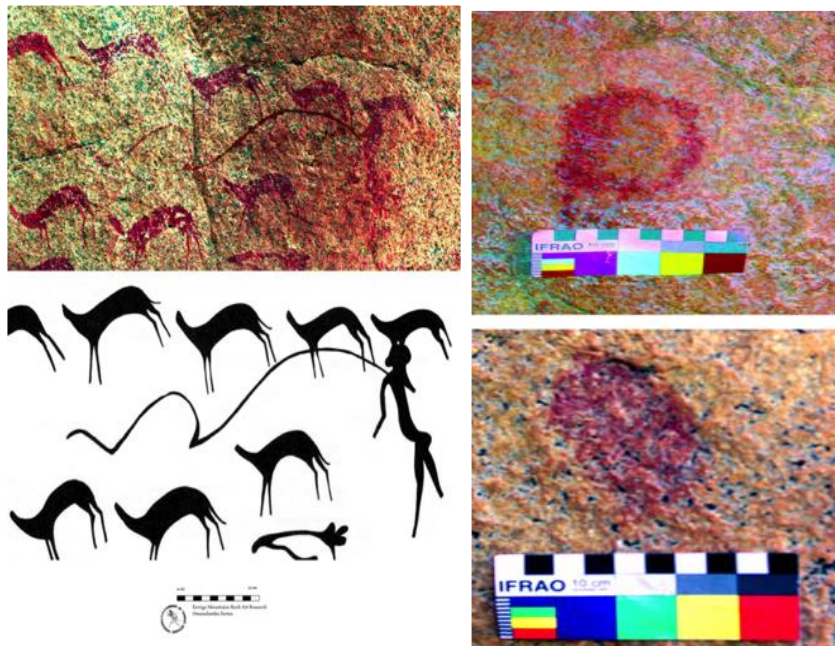


Figure 6.97 Left image indicates a lineal depiction at site OWF39b while the right are some circles & dots depictions found at site OWF56. All DStretched images at 10 LDS scale.

c.6.Indeterminate Elements (367)

The taxonomically class of indeterminate or unidentifiable group of rock paintings figures accounts for 20.4%, which is the third most representations in the painting repertoire. The indeterminate category comprises of figures that have limited or lack diagnostic features such as anatomical inferences, required to define them according to other categories, as their forms do not depict any form of recognizable design or shape (Fig. 6.98).

Most of these figures suffered as a result of several deteriorations. In some cases, dust generated by human and animals obscure figures while organic acids secreted by rainwater, animal (rock dassies) urines and other growths had also slowly altered the surface of the rock, which then becomes weathered. In addition, some of the painted rock surfaces of some shelters are fully exfoliated and has largely flaked off hence, showing a few blobs of pigments thus classified into indeterminate category while at some sites, paintings are partially covered by wasps.

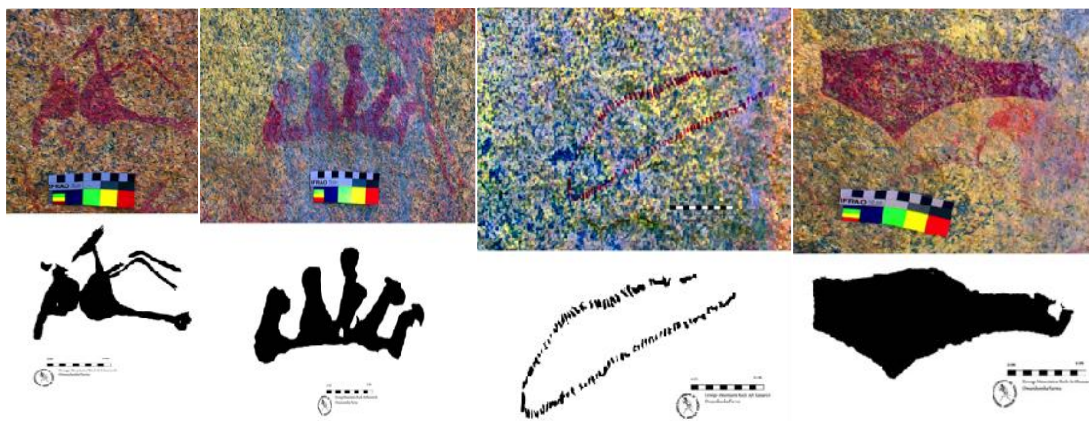


Figure 6.98 The top left image indicates the indeterminate design from the 'Crown Boulder' OWF 52b. The middle image shows the well-known 'Crown' from the Crown Boulder/site OWF52b. The third image shows another indeterminate outline figure in shape of 'shoe sole' from site OWF39b while the last image to the right is another indeterminate design from the 'Crown Boulder'. All DStretched images at 10 LDS scale.

d. Techniques of painted artworks

In the painting repertoire, only varieties of fine line techniques have been applied in the production of rock paintings in the study. These include those that have been outlined with a single line, outlined figure with its interior partially and fully filled with same colour, monochrome figure with colour (black, red, brown and orange blocked in as well as bichrome figures that have been painted with two block of colours in the same figure as shown in (Table 6.10 and Fig. 6.99).

Technique Employed	Sum of Figures (n=1798)	% Of Figures 100
Monochrome: (black, brown, orange & white)	1303	72.5%
Outlined: Single line without infill	24	1.3%
Outlined: Single line & partially infilled	438	24.4%
Outlined: Single line & fully infilled	25	1.4%
Bichrome: (red & white, brown & black)	8	0.4%

Table 6.10 Present the variables in the Technique of rock paintings in the study.

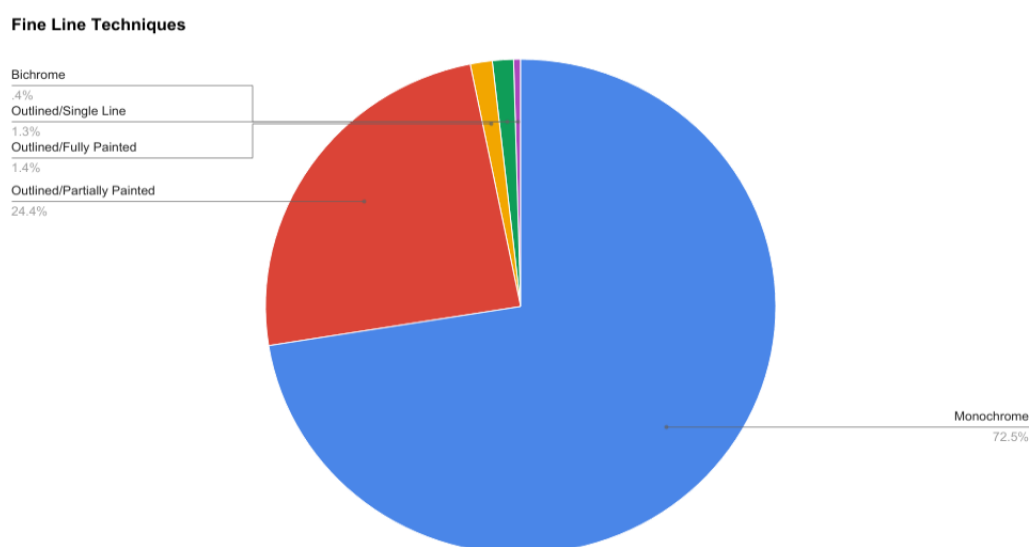
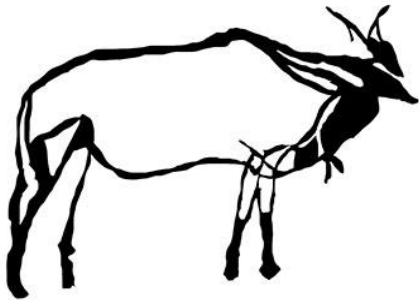
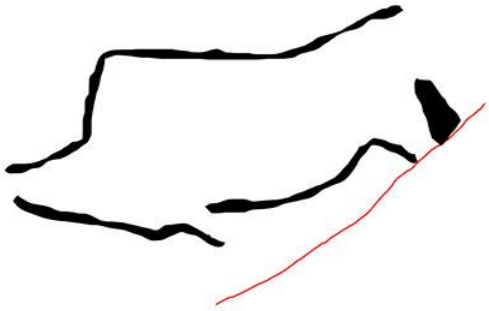
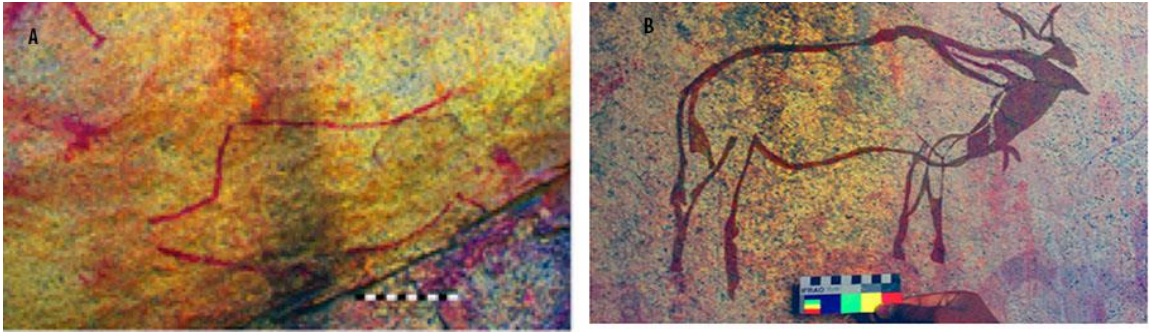


Figure 6.99 Present the variables in the Technique of rock paintings in the study.

The techniques analysis indicates that the majority of the rock paintings, about 1306 (72.5%) have been painted fully in monochrome (red, brown, black and white pigment). About 438 (24.4%), are those that have been outlined in monochrome (mainly in red, brown pigments and very few white).

Artworks under this category have been outlined with the figure's interior partially filled with same color while those that have been outlined first and the fully filled with paint

accounts for 25 representing (1.4%). The paintings that have been outlined with a single line without any in fill account for 24 (1.3%) in the repertoire, followed lastly by those painted in bichrome 8 (0.4%) mostly a combination of brown and red and brown and white. No polychrome elements have been recorded in the entire painting repertoire so far. Following the technique analysis above, (Fig. 6.100) below present examples of various fine line techniques applied in the study.



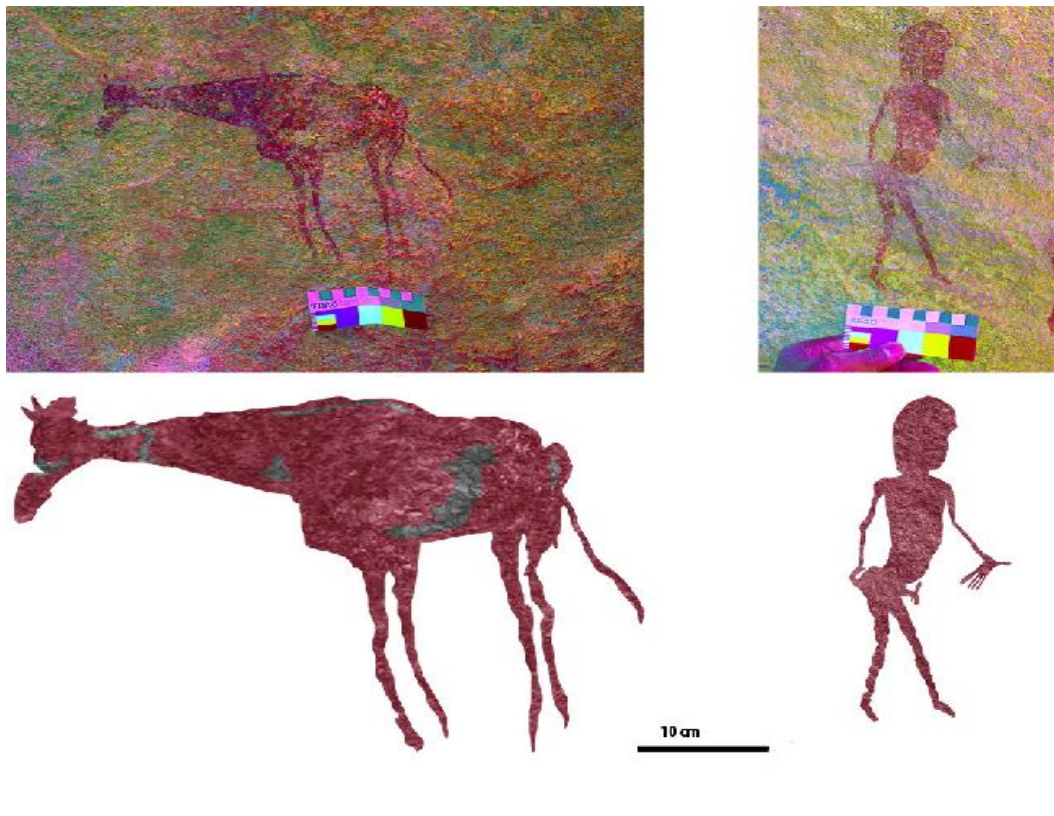
10cm

A

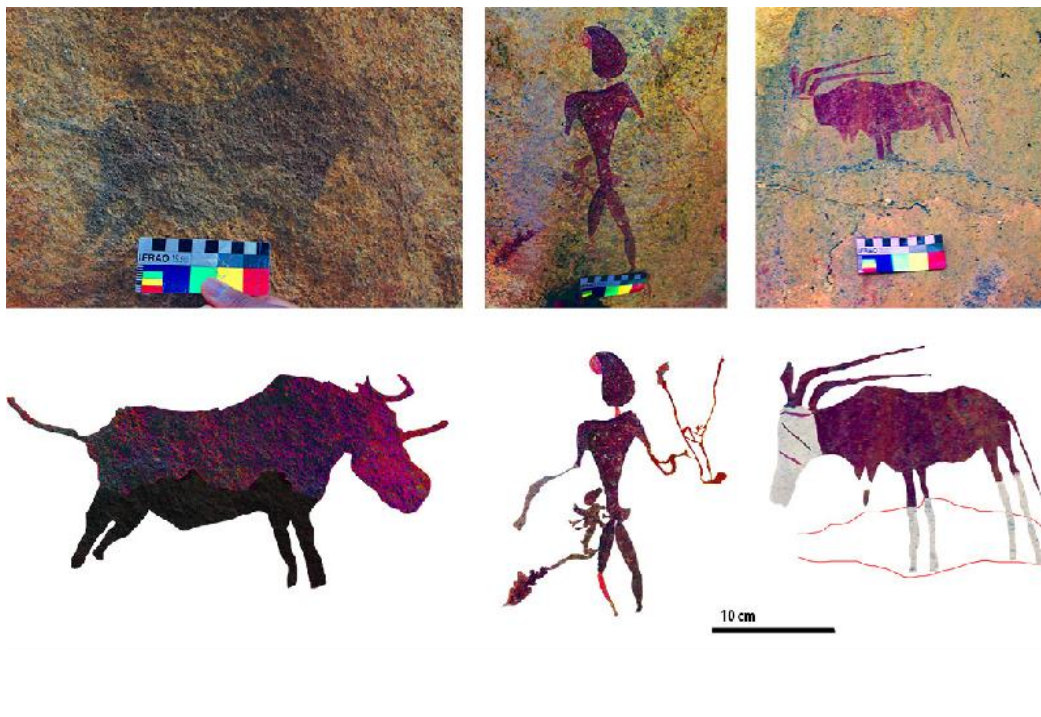


10 cm

B



C



D

Figure 6.100 Various fine line technique artworks. (A) Left is an outline with no infill from site OEF58, right: an outlined and partially in-filled animal figure at Site OWF49. (B) Images an outline and partially in-filled human figure at site OWF25 & OWF46b. (C) Figures that have been outlined and fully in-filled with same paint. Figures from site OWF01. (D) Are bichrome figures from left OWF43 (rhino -brown & black), middle OWF05 (human - red & brown), right, OWF12 (Oryx - brown & white). Monochrome depictions (see image display C).

e. Superimpositions

Elements of superimpositions in the Namibian rock painting antiquity are quite common. These varies from paintings overlapping other paintings with (different or same colours) or instances where paintings overlays engravings. The most common superimpositions cases are of human over human figures or animals over other animals or vice versa. In the study areas, I have also recorded a large number of superimpositions of elements, representing 38.1% of the total rock paintings repertoire. These were recorded at various rock-painting site widely distributed across this landscape. Most of the overlapped artworks are often badly deteriorated (especially those painted in red) and few figures that survive superimpositions are in good state of preservations (i.e. black and deep red, white and brown or brown over brown). Establish overlapping and identifying the sequences among these paintings and analysing them is difficult. Most of these figures have to be treated through the application of DStretch first. It is therefore apparent that there could be more elements than those presented in this thesis.

My observations of the superimpositions in the study areas indicate that a greater extent of superimposition is not driven by the absence of paintable surfaces or lack of space on the painted panels. As a matter of fact, most of the superimposed elements occur on expanse of highly suitable panels most of which are unused but with room available. This strongly supports a case for premeditated intent to carefully positioning figures on other figures. It is likely that this was achieved by same artist or added later by different artists.

It is possible that large sites - especially habitable one i.e. OWF30, OWF39 and OWF41 with many and larger figures (offering high visibility) attract more superimposition than those with fewer and smaller figures (often with low visibility) as it have been observed at smaller sites. However, it becomes challenging to ascertain whether the superimpositions occurred immediately after the overdrawn figure was created (especially those painted in the same color) or not. If not, it is possible that the older figure had deteriorated to the extent that the later artists did not really notice it when choosing a canvas (especially those painted in light oranges or red). Nonetheless, all the decipherable superimpositions recorded in the study areas were quantitatively analysed as reflected in (Table 6.11& Figure 6.101).

Elements	Sum of Figures (n=685)	% Of Figures	Sum of Sites (n=46)	% of Sites
Zoomorphisms	359	52.4%	17	37%
Anthropomorphisms	208	30.4%	13	28.3%
Phytomorphs	6	0.9%	2	4.3%
Indeterminate	112	16.4%	14	30.4%

Table 6.11 Shows the number of figures per sum of sites that lie over an existing figure (s). In total there are 685 paintings superimposed over existing figures – about 38.1% of the total.

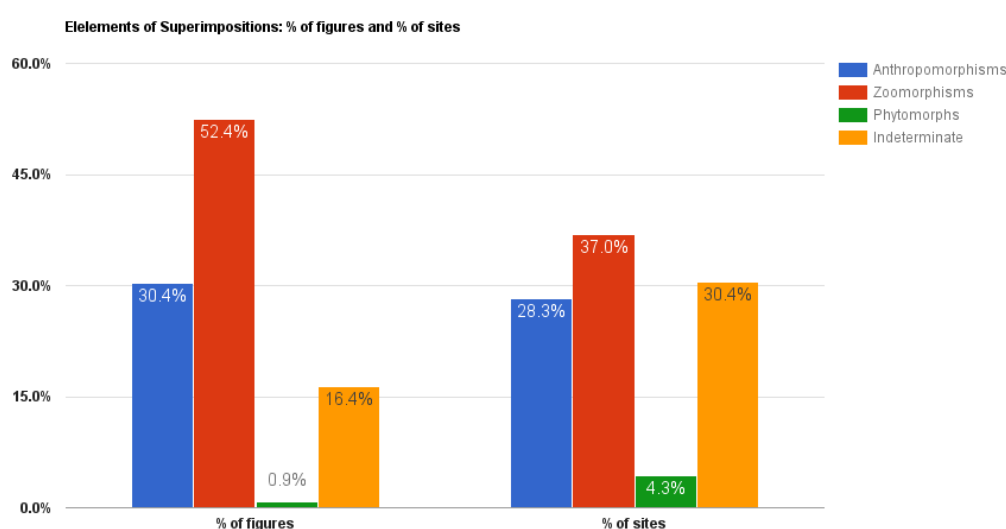


Figure 6.101 A histogram Analysis of the superimposed elements per total number of sites in the study areas.

The analysis presented in (Table 6.11) & Fig. 6.101) above shows the proportion of overlying figures in the study. The high proportions of superimposition have been recorded amongst the zoomorphic figures 52.4% recorded from at least 17 sites. The majority of the zoomorphs depictions subjected to superimpositions are zoomorphs as either the over- or underlying other zoomorphs 86%. Zoomorphs over anthropomorphs account for 12% while very few have been superimposed on other elements 2%.

The placement is rather intentional at this specific panel than a random act. The reoccurring feature among the zoomorphs superimpositions is the fact that the artists appear to have respect for the earlier artists because they ensure that the original figure remains clearly identifiable from a succeeding figure (s). This is only achievable where different pigment

colours have been used. When one color is used, it becomes impossible to establish which image overlaps which figures (see Fig. 6.102 & Fig 6.103 for illustrations). In order to establish the sequence of figures within the overlapping's five colours were used to distinguish possible three phases of superimpositions. These include figures that have been painted in red, brown, black, orange and those in white. Furthermore, zoomorphs figures such as elephants are likely to be among the oldest figures for they have remarkably been subjected to superimpositions in the study while other animals. Therefore, such animals stylistically fall under layer 1 like giraffes, rhino, ostriches, eland and wildebeests are likely younger as they have been superimposed on various figures at many sites (Fig. 6.102 & Fig. 6.103). Stylistic analysis also indicates that these are the most outlined figures.

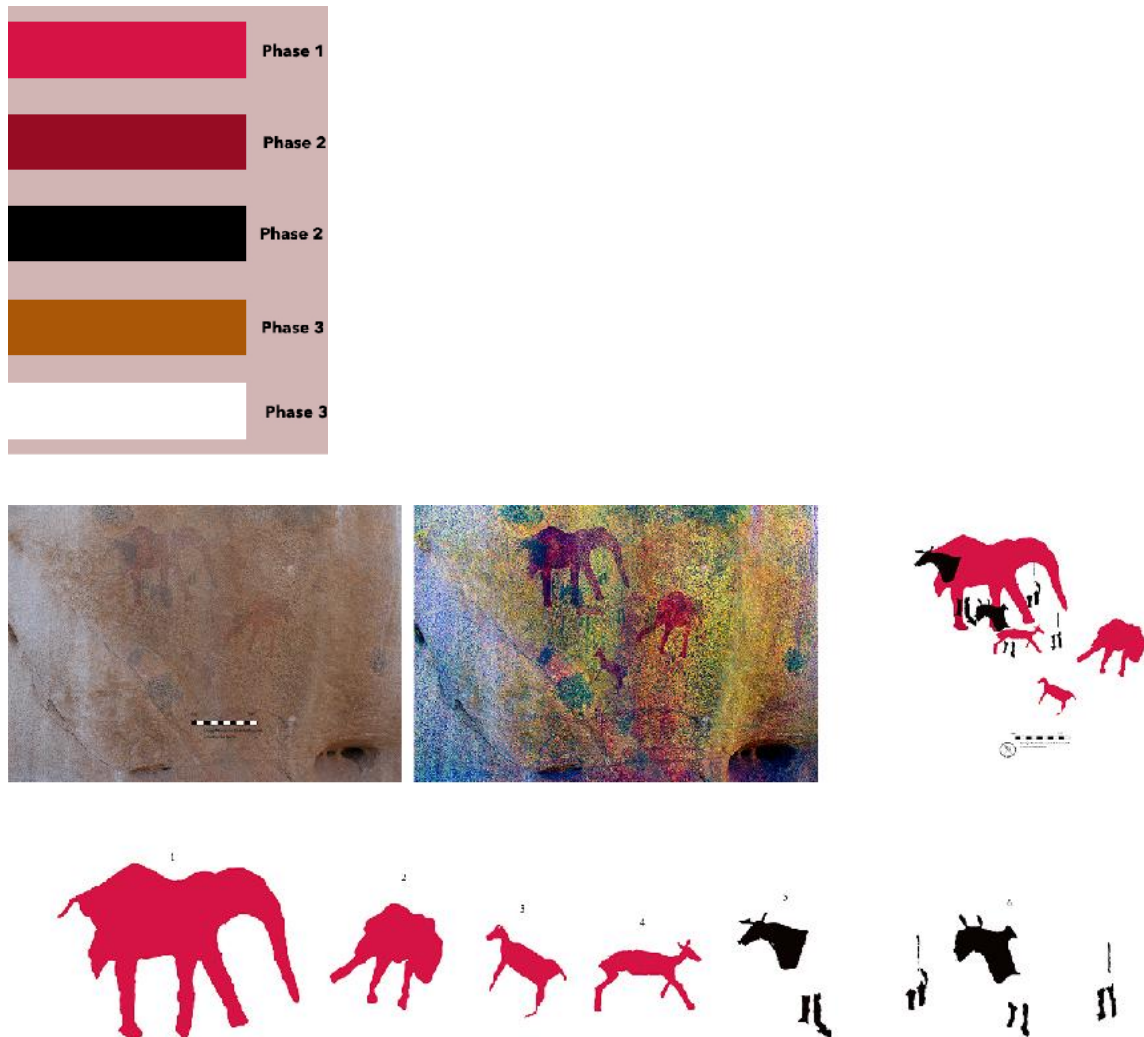


Figure 6.102 Presents a reconstruction of the superimposed elephant by two elands. The use of two colours led to establishing the overlaying figures, technique, style and scene. The site comprised of two phases only. Figures in red paint are older than those painted in black paint. Deconstructed figures at the bottom are at 15 cm scale. The DStretched image in middle is at 12.5 LDS scale.

Since zoomorphs constitute the most commonly encountered figures linked in superimpositions; the high incidence of this particular linkage provides visual support for the postulations of intensifications of ritual activities designed to increase the supply of game animals especially during dry seasons when food supply becomes scarce.



Figure 6.103 Present detailed superimpositions observed on the entire Panel OEF60a. Here, all the elephants have been overlapped by various animal figures (particularly giraffes and springboks). The superimposition of the figures also made it possible to establish the techniques used, styles of figures and also the stratigraphy of the animals. Figures in the 1st phase are painted exclusively red paint, followed by those painted in brown, the 2nd phase and lastly the 3rd phase wherein figures have been painted in pale orange. The DStretched image in middle is at 12.5 LDS scale.

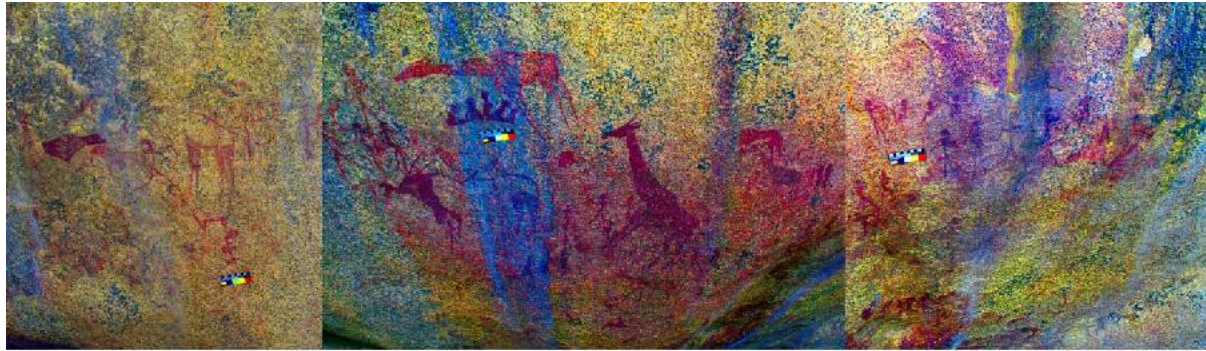


Figure 6.104 Top and bottom images show a scene of zoomorphic figures superimposed over human and vice versa at Site/Panel OWF52a. Here, three phases of superimpositions were established. In this scenario, red figures are the earliest depictions followed by the in brown while the orange figures are the later depictions at the panel. The DStretched image in middle is at 12.5 LDS scale.

Overlapping among the anthropomorphs constitute 30.4%, recorded among 13 sites. Anthropomorphs overlapped over by other anthropomorphs depictions are less frequent in the study accounting 10%. Most of them are painted in the same color. Therefore, establishing which image overlay which prove to be difficult especially when the paint is consistent and figures are matching stylistically. Superimposition among human figures painted in different colours made it easier to deconstruct, as the colours used do not have the same consistency. Figure 6.105 below illustrates two examples in the study from site OWF04a and OEF57:



Figure 6.105 Shows two reconstructed examples of overlapping among anthropomorphs in the study. Image on the left depicts superimposed humans at site OWFO4 while the image on the right shows overlapped human/animal figures at site OEF57.

Anthropomorphs figures that have been superimposed either on or by animals and other elements account for 90%. When a different color is used and the figures in good state of conservations, establishing overlapping among the figures also becomes possible in this case, (Fig.6.106) below.



Figure 6.106 Shows reconstructed overlapped human figures on some animal figures scene recorded at site OWF26a. In this case, human figures are in the third phase. All figures at 10cm scale. The DStretched image in middle is at 12.5 LDS scale.

Arboreal depictions that have been subjected to superimpositions accounts for 0.9% occurring at two sites namely OWF39b and OWF50. These depictions have been superimposed on earlier animal figures (Fig. 6.107) and some human figures (painted in red). In all instances giraffes figures has superimposed on the tree figures. Therefore, stylistic analyses indicates that they likely older than animals painted in brown colour or giraffe in particular

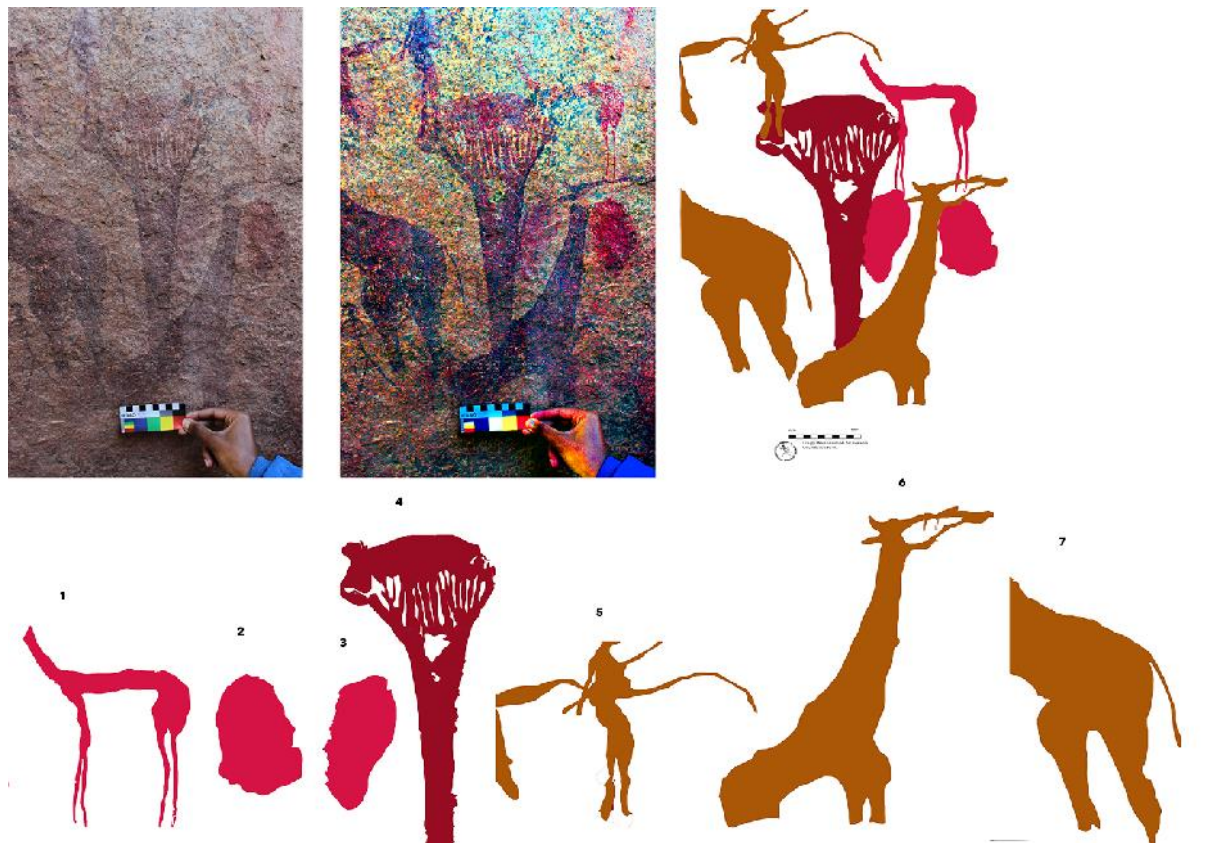


Figure 6.107 Shows reconstructed tree figure superimposed on a springbok figure and overlapped by a giraffe figure at site OWF39b. In this scenario, the tree figures falls under the 2nd phase. All figures at 10cm scale. The DStretched image in middle is at 15 LDS scale.

Indeterminate designs subject of superimposition are also many 16.4% recorded at 14 sites in the study. The majority of these forms fall under layer 1, based on their colour and their juxtaposition to layer 2 figures.

e.1. Painting Sequence

Establish the time difference between painting episodes is one of the most arduous and challenging process. Renowned rock art scholar David Whitley, (WHITLEY 2005: 55) has also admitted that such differences may be separated by few minutes, it may be the same day, same year or thousands of years apart. Whitley even went further to suggests that superimposition sequences may not primarily be a function of age but what is clear is that one

episode was painted after another. Therefore, superimposition may not necessarily reflect time depth only but also a cultural associations where over-painting describes relationships between figures or colours used.

Based on the analyses of superimpositions of paintings in the study, at least three painting episodes are detectable on some of the scenes of the panels. Elephant's figures appear to be some of the earliest figures, falling under phase 1. At site OWF56 for instance, (Fig. 6.102) elephant has been subjected to superimpositions by two partially drawn elands in black; hence the black colour falls in the 2nd phase as it overlays the first phase similarly at site OEF60a, all elephants figures have been superimposed over by other fully painted animal figures in brown that falls under the 2nd phase as well as one outlined giraffe figure which falls under the 3rd phase (see Fig. 6.103). Some human figures painted in pale red are also falling under the 1st phase as they have been subjected to superimpositions. See examples from OWF52a and OEF57. In the same first phase, are also some of the fully painted headless springboks and some indeterminate figures (Fig. 6.105). Outlined and fully painted giraffes and other fully painted animals in brown monochrome at site OWF52a (Fig. 6.107) is even harder to establish. It is possible that outlined animal figures such as the giraffe and wildebeest might be of later stage but stylistically their morphology is similar to the outlined kudu partially superimposed by the wildebeest. Therefore, establish such sequence becomes impossible.

Three sequences of overlapping's has been observed at one of a scene at site OWF26a (see Fig. 6.106). Here, earlier figures range from 1-5 including fully painted rhino override by a fully painted giraffe in the 2nd phase. All the other figures superimposed on this scene appear to be late figures hence in the 3rd phase. Another complex superimposition situation is observed at of the prominent scene of site OWF39b where an arboreal figure (phase 2) has been superimposed on a headless springbok and some indeterminate figures (possibly phase 1). The original image of the fully painted giraffes and the tree have the same consistency of paint, however, it is evident that the tree is painted earlier than the giraffes hence the giraffes are included in the 3rd phase.

As demonstrated in all the detailed figures under superimposition, it is possible to construct the stratigraphic layers of overlapping. However, determining the times possible that these artworks have been created in isolated episodes since both of the painting techniques and styles differs with earlier figures like the elephants to be fully painted while younger figures like the giraffes appear to be outlined with single line or partially outlined. This is further

collaborated by the Brandberg analysis of the giraffe's rock paintings and engravings by Jürgen Richter (RICHTER 2008a) who suggests that the outlined giraffe without in-fill is younger belonging to Mode 3 representations. In his studies in the Brandberg Tilman Lenssen-Erz (LENSSSEN-ERZ 2001) has also indicated that elephant are likely to be among the oldest motifs as they were subjected to superimpositions.

f.Pigment

Various pigment colours have been used in the production of rock painting (Fig. 6.109). The color of the artwork in most cases influences the visibility of the artwork. (Fig. 6.108) below present the frequency analysis of pigment color used in the rock paintings in the study areas.

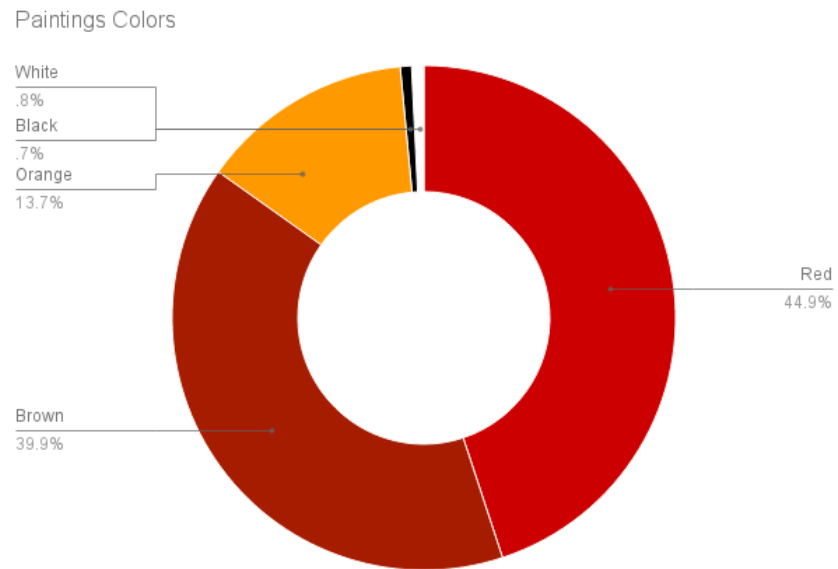


Figure 6.108 Shows the frequencies of colours used in the production of rock paintings.



Figure 6.109 Present the original colours of rock paintings in the study. (A-B) shades of brown, (C) represent orange, (D) are black and (E) are red while white.

The pigment analyses above indicate that varieties of red paint (deep and shallow) have been predominantly used and account for 808 (44.9%) artworks in the study areas. However, the majority of the artworks painted especially in shallow red are in very bad state of conservation. This, in combinations with the color of the rock surfaces and other biological and chemical deteriorations has attributed even more to the fading of the figures; hence most of these figures fall under the indeterminate category. Most of these figures are visible through DStretch application. Following red paint is the varieties of brown pigment, which account for 717 (39.9%). Artwork painted in brown is the most well preserved artwork. The majority of animal figures have been painted using reddish and brownish colours.

Shades of orange account 246 representing (13.7%) of figures while white color account for 14(0.8%). Figures painted in white are uncommon although they are among the most interesting artworks. The majority of them are fully painted in white monochrome. There are however, few instances where white paint has been used in combination with reddish or brownish colours to distinguish features of animal bodies. Painted figures in black account for 13 in the study, representing (0.7%) as shown (Figure Fig. 6.100). This color is quite rare in the repertoire and was recorded at four sites in the study areas. The majority of the anthropomorphic figures and many animals including elephants, zebra, quagga, bees and bees' swarm, snakes, kudu, felines and springboks while elands were painted exclusively in black and red. Giraffes, oryxes, ostriches, wildebeests, warthogs, some rhinos have been painted in brown hence are some of the well-preserved animal figures in the study. The paintings in orange or reddish yellow were less visible and common among springboks. Almost all figures in the indeterminate category are those painted in the variations of red colours (red, light red and orange/reddish yellow).

g. Conservation Variables of Rock Paintings

The conservation analysis evaluates variables relative to the current condition and the potential threat to the rock paintings and engravings in the study areas. This was crucial as a sound conservation management practice in order to make recommendations for the appropriate conservation methods for the sites. This assessment provides baseline data, which allow future monitoring of decay or damage to the rock art. It also identifies sites that require immediate protective measures. The assessment looks at many aspects of conditions including deterioration triggered from anthropic impacts, animal impacts, biological threats, and

chemical/physical processes. The analyses evaluated both rock painting and engraving sites and are presented together in the following (Table 6.12).

Types of Impacts	Number of Cases (max 61)	%of Variables
Anthropic Impacts (Human Impacts)		
Graffiti (carved)	3	8.8%
Graffiti (Painted)	1	2.9%
Chips and Scratches	1	2.9%
Construction near site (camp site)	7	20.6%
Mining and Quarrying	3	8.8%
Dust	20	58.8%
Burned Areas (camp areas)	1	2.9%
Animal Impacts		
Droppings (game/stock) of animals Waste beneath the panel	27	37.5%
Wear (Rubbing)	9	12.5%
Wasps	3	5.6%
Chips and Scratches by animals	2	2.8%
Animal blood or droppings on the art wall	28	38.9%
Diggings	2	2.8%
Biological Impacts		
Vegetation (roots, branches)	6	4.7%
Grass Turf/Patches waste	4	3.1%
Erosion (Water run-off)	59	46.1%
Sun Exposure	59	46.1%
Physical and chemical Threats		
Planar (scaling/flacking)	39	23.9%
Undercutting (beneath the panel)	2	1.2%
Scaling & flaking (future break-off)	4	2.5%
Differential erosion (water flow onto rock surfaces)	61	37.4%
Exfoliation	60	35.5%

Table 6.12 Present the summary of the current threats affecting the rock art sites (paintings and engraving sites) in the study areas.

The analyses indicate that the main causes of deterioration in rock paintings are biological and physical and chemical threats. Rock paintings are remarkably fragile to sun exposure which has ultimately resulted in the exfoliation of rock surfaces which greatly contributes to the fading of the rock painting figures. Those that were not affected by the sun exposure include artworks recorded in caves only (i.e. Leopard Cave and Ghost Cave). The sun exposure has affected more exclusively painting sites in rock shelters, boulders, sill and ledges and on granitic wall. However, their exposure levels differs seasonality. The severe cases of exfoliations were greatly noted at every rock-painting site (Fig. 6.108 -4th figure). The rate at which the rock paintings are deteriorating is still unknown given the fact that few that were recorded by *Abbé Breuil* in 1950s (BREUIL 1960) where mainly traced and those that were photographed are in black white images which prove to be difficult to determine the change. However, this would require further research (Fig. 6.110).

Run-off from rainwater erosion has also greatly affected the painted surface creating whitish patches 'wash zones' that cover most sections of painted surface that partially obscures the rock paintings (Fig. 6.110). Other water related concerns at most sites including those in caves in form of thin coating layer of brown to dark marks in the ceiling of the sites obscuring some rock painting figures while making others difficult to detect especially those painted in black pigment. It's possible that the run-offs that flow into some sites contains dassies secretions in form of urines and faeces resulting in the deposition of black patches at some areas of the ceiling in sites. Most of the artworks painted in white pigment are specifically in poor condition due to the fact that their painted surfaces has developed layers of lime overlying the artworks in large parts.

Animal impacts at the rock art sites also take their toll. Game droppings have been observed at about 27 sites in the study. This comes as a result of animal using sites as temporary resting places (proving shades at certain part of the day) and on in doing so animal scratches their bodies onto painted surfaces and sometimes digs beneath the painted rock. There are some cases where surface artefacts at some sites have been trampled on and dislocated by animals as a result of persistent use of these sites. Some paintings been obscured by the activity of birds, secretions (urines - especially from rock dassies) and certain insects such as termites and mud wasps that build nests on painted rock walls. In some areas of the rock surface there are dark brown marks that I identify as dassies (*Procapra Capensis*) urine, that run from the top of the panel to the bottom that creates grey wash mark during rainy season. Such marks

appears to be inactive during summer and does not completely obliterate the figures, dassies urine and bird droppings are however active threats. Plants, too, have affected the rock art sites. There were instances where plant roots have expanded rock fissures, which ultimately led to the splitting/breaking off the boulders hosting the rock art. At some sites, tree branches where recorded brushing onto painted rock surfaces which ultimately deteriorate artworks.

Human impacts (Fig. 6.111) are generally minimal with the study areas. This is because the farms are privately owned and access to rock art sites requires permission from farms owners. There is however few cases of unauthorized visits to the farms by illegal miners who query precious minerals in the Erongo Mountains. They have caused damage to some rock art sites in form of erecting fires in some painted rock shelters. At the rock-engraving site, graffiti in form of scratching on panels (with and without rock art) have been recorded as tourists scratched their initials and also attempts to engrave some animal figures. At the San living Museum, numerous fresh painted artworks superimposed on older paintings on the large boulder that hosts the SLM. Several constructions near and in the rock art sites especially in Omandumba West farm have been record. Here, this construction includes the establishments of campsites and their amenities. Such establishments directly impact about 7 sites.

The type of impacts visible at the camping sites may be divided into damage to the paintings themselves and damage to the site, or physical setting of the paintings. Damage to the paintings in the form of graffiti such as charcoal, pouring of oily and soapy liquids as well as dusts accumulate from constant trampling of the sites grounds. Furthermore, the continuous sweeping of the site ground surface raises dust that accumulates onto painted surfaces which contributes to the obscure the artworks and ultimately the disappearance of the figures. Sweeping also reduces sensitive surface archaeological collections hence reducing the sites scientific value of the site deposits.

Other human impacts include creations of paths and farm roads in close extreme proximity to rock art sites. The artworks that are positions at the bottom of the sites suffer greatly as a result (site OWF50, OWF52). Dust accumulates from current and previous archaeological excavations at some sites for instance at site OWF39 and OWF42 have also contributed to the deteriorations of some artworks at these sites.



Figure 6.110 Present varieties of threats affecting rock-painting sites emanating from natural, biological, physical and chemical threats. Top left, run-off from rainwater that created whitish patches ‘wash zones’ that cover most sections of painted surface at Site OWF01. Top right, vegetation covers and scratches onto painted rock surface. Middle left, wasp nests and layers of lime overlying the artworks at Site OWF08 while middle right is massive exfoliations that have completely damages some of artworks, creating blobs of pigments as observed at Site OWF32a. Bottom image shows the effect of dassies secretions on painted rocks and it’s surrounding at Site OWF55.



Figure 6.111 Present varieties anthropic threats affecting rock-painting sites. Top left, new paintings overlapping old artworks at Site OWF15. Middle, a rock art site turned into a camping site at OWF16. The image shows the shower area. Bottom left image shows the impact of illegal mining near a rock art site 90WF 46a &b). Bottom middle - scratched graffiti at the rock-engraving site while bottom rights are some charcoal graffiti at Site OWF56.

h.Surface Archaeological Materials

In addition to rock art figures as surface archaeological records, examining the nature of other surface archaeological collections present at each site or panel was equally important in order

to determine the possible functions of the sites as well as establishing sites archaeological potential for further investigations. For this, I have ranked the number of surface collections found at each site/panel (based on the type of surface collection recorded at each site) and categorized them into three: X - representing low quantity materials (from 1-10), XX-moderate quantity (from 10-20) and XX – high quantity (greater than 21 <). These were then linked to the type of site in the study as illustrated in (Table 6.13) below.

Type	Quantity (X, XX, XXX)	No. Of Sites (n=61)	Type of Sites
1) Beads	X	1	Shelter
2) Ceramic/Pottery	X	6	Shelters (2), Caves (2), Boulders (4)
3) Charcoal	XX	5	Shelters
4) Hematite	X	2	Shelter (1) & Boulder (1)
5) Heath/Sediments	X	8	Shelters (4) & Caves (2) & Boulder (3)
6) Lithic	XX	18	Shelters (5), Caves (2), Boulders (10)
7) Pestle	X	1	Shelter
8) Ostrich Eggshells fragments	XX	7	Shelters (6) and Cave (1)
9) None (Sites with no surface artefacts)	0	13	Boulders
10) Stone structures	X	2	Shelters (1)

Table 6.13 Present the nature of surface archaeological deposit recorded at all the panels in the study areas.

The results presented in Table 6.13 above indicate that among the low density of surface collections include the ostrich egg beads and pestles recorded mainly at (Site OWF39a/Fackelträger). The presence of such materials came as a result of post-depositional situation resulting from the site's previous excavations (see site description). Beads and the pestles where recorded in spoils of sieves deposits where other surface collections like charcoal, hematite stone, pottery fragments, some lithic (gridding stones and many debris from stone tool productions) see (Fig. 6.112 A, B and E) were recorded. Similarly, hematite distributions were equally limited, recorded only at two sites (OWF39 and OWF01) while very few fragments of ostrich eggshells were also recorded at limited sites. Two small and large stone structures/arrangements clustered and centred around two sites; OWF46/Priests shelter and OWF47/Ostrich Shelter were recorded in the study (Fig. 6.110 F).

The initial assumption was they could serves as burial grounds. For this reason, two test excavations in two stone structures were carried out by the Leopard Cave principal

investigators; David Pleudeau and Florent Detroit back in 2009 but did not recover any human remains nor any other form of archaeological materials

The limited number of sites with sediments/ hearths deposits in the study areas is an indication that there are only six sites (site OWF21/Helmut boulder, OWF25/Blackman Shelter, OWF26b/Giraffe Cave, OWF30/Christian shelter, OWF42/Leopard Cave, OWF49/Seal Shelter and OWF39/ Fackelträger shelter) that have potential for further archaeological investigations in the entire study areas.

However, some of the sites are and had received archaeological attention already (OWF42/Leopard Cave and OWF39). There were instances where some e boulders (i.e. site OWF21/Helmut boulder) had registered sediments (Fig. 6.101 E) and a number of other surface archaeological deposits (i.e. lithic, charcoal and few pottery fragments) but the site's sediments were heavily disturbed by the animals that rests beneath and immediately on the real of the panel where boulders form a very small shelter like site. However, one would argue still that the site has potential for further research. Moreover, a site like OWF25/Blackman shelter has equally potential but due to erosion (from rainy waters) most of its surface collections has been dislocate and re-deposited near the site while most of it must have been carried away by the river course just in front of the site.

Sites with moderate density of surface collections included those with lithic and charcoal deposits. Lithic materials (mainly from basalt) are amongst the most widespread surfaces archaeological material registered from 48 panels in the study. However, such materials ranges between 5 to above 15 on average and it are likely that very few of these sites were production sites as there is residue evidence of lithic productions (i.e. at Site OWF41). While other sites show evidence of possible re-depositional of some lithic artefacts into their current locations due to lack of knapping debris. With the basalt being available resource in the area, the threshold for discarding such materials might have been high. While evidence of fire in form of charcoal deposits are only limited to shelter sites, where traces of habitations were recorded.



Figure 6.112 Present the nature of surface archaeological deposit recorded at all the panels in the study areas. (A) Various lithic and small pottery fragments artefacts from shelters and caves (B) Charcoal deposits from shelters (C) large pottery fragment from a boulder (Site OWF38), (D) pestle with brown pigment from Site OWF30, (E) typical hearth sediments from boulders (Site OWF21) while (F) stone structure from (Site OWF46 and OWF47).

Sites registered the majority the surface collections recorded in (Table 6.13) where mainly registered in all rock shelters (OWF25, OWF30, OWF39 and Cave shelters (OWF42 and OWF26b). These sites functioned as habitation areas either as short to medium living spaces by a smaller groups of people (due to limited spaces in the sites). Recent archaeological excavations i.e. at site OWF39 and OWF42) suggests various site's occupations at different periods. The high quantity of lithic debris for instance recorded immediately in front of the site OWF42/Leopard Cave suggests that stone tools production likely occurred there or lithic artefacts might have discarded there resulting in the re-deposition of such materials.

Sites that registered very limited surface collections - mainly lithic materials and very few pottery fragments are the boulders. The majority of these sites are located at the bottom of the imposing features, more especially in proximity to water source such as springs. Theses sites likely serves as hunting locale where animals where ambushed and hunted. The geomorphology of the sites are typically hunting blind where hunters where able to either sit or squat in as they waited for game come by water points. While others sites in this category (located slightly above the low elevations) might have acted as surveillance sites, where animals might have been under constant watch. While sites with few surface collections but located on high topography namely the OWF46/Priests shelter and OWF47/Ostrich Shelter are likely to be ritual spaces as the site settings, the type of artworks and its surrounding scape are indicative of a ceremonial sites.

There were several sites with no record of surface collections where recorded at 13 sites all of which were boulders hosting rock art figures. All these sites do not provide any space for human habitation due to their geomorphological formations. Their location in the landscape indicates that they might have acted as corridors (i.e., temporary resting places or transportation conduit for hunters as they are favourable for resources procurement).

i. Summary of morphological Analyses

The overall records for rock art Omandumba farms contains a total of 60 rock paintings sites containing 69 panels comprising of 1798 individual rock art elements. Through the morphological analyses, all the figures were classified and quantified at each panel in an effort to understand their density and diversity. The number of figures per site ranges from a zero to a maximum number of 203 with the average number of figures per panel standing at 30.4 while the average number of figures per panel account for 26.05 with a maximum values of 169 figures to a minimum number of 0 figures per panel. The highest density of figures therefore (50 – 169) figures per panel was recorded at few sites accounting 15% of the sites. Medium density panels (10-49 figures) were more common within the site representing only 72% while lowest number of figures per panel (0-9) was recorded at 13% of the panel in the site.

The rock paintings comprise six categories of figures, altogether representing a total of 1798 individual elements. The highest frequency of 49.7% was recorded among the zoomorphs depictions. This category includes all the figures that could be clearly identified as an animal. However, among the zoomorphs taxa, only 35.3%, about 315 elements could be determined. Unidentified zoomorphs were lumped together into the indeterminate zoomorphs with 578 depictions representing 64.7%. This group includes all animal figures that have the basic parts (torso and limbs) to include them in the zoomorphs depictions category but whose biological identifications could not be established due to lack of anatomical references. Anthropomorphic depictions are second most dominant class of elements accounting 509 figures representing 28.3%. Men have outnumbered women with 67% while women represent only 25.5% of the total. Human figures whose gender could not be established fall under the category of indeterminate human figures, which account for 7.5%. The key determinant factors among human figures were the physical morphology and distinguished objects carried.

Therianthropes representations of human with animal's features accounts only 0.2% in the study and these were recorded at three sites only. Figures depicting tree-like representations are some of the few frequency, accounting to 0.15% recorded at three sites in the entire study. Another less frequently represented category was recorded among the abstract forms 2.3%. The abstract signs including outlined lineal, circles and small dots most of which have been juxtaposition to some figures mainly dominate the abstract arts. Figures that could not be easily determined were lumped together under the category 'indeterminate' and are the third

most represented accounting 25.4% of the total elements. The indeterminate category consists of figures that completely lack definite and diagnostic features.

The techniques analysis suggests that all painted artworks have been achieved through five types of fine line technique. About 72.5% have been fully painted in monochrome (either red, brown, black or white pigment) while those that have been outlined in monochrome with their interior partially in-filled with same color are the second most dominant figures accounting 24.4%. Figures that have been outlined first with their interior fully filled with the same paint accounts for 1.4% in the study. Those that have been outlined with a single line without any in-fill account for 1.3% followed lastly by those painted in bichrome 0.4%, (frequently a combination of brown and red and brown and white. No polychrome elements have been recorded in the entire painting repertoire so far

Elements of superimpositions are more frequent in the study. The highest proportion of overlying figures in the study has been recorded amongst the zoomorphic figures with 52.4%. Zoomorphs over or underlying other zoomorphs is the majority representing 86%. Zoomorphs over anthropomorphs account for 12% while the low frequency are zoomorphs superimposed on other elements 2%. Overlapping among the anthropomorphs comprise 30.4%. Anthropomorphs over or under anthropomorphs are less frequent, with only 10% while anthropomorphs over or under animals and other figures account for 90%. A low frequency of arboreal depictions has also been subjected to superimpositions in the study with 0.9%. Depictions in this category have been overlapped mainly by animal figures particularly the giraffe (fully painted ones) while few have overlap human figures. Superimpositions among the indeterminate forms account for 16.4% in the study. These depictions are superimposed mainly by animal figures and some human depictions.

Various pigments have been used in the production of rock painting figures. Red paint has the highest frequency of 44.9% in the study. However, the majority of figures painted in red were only visible through DStretch application hence most of them in a poor state of conservation. In addition to red, diversities of brown pigment were equally used and account for 39.9%. The majority of figures painted in brown are the most well preserved artworks in the study. Figures painted exclusively in monochrome oranges account for 13.7% while those painted in white color account for 0.8% in the study. The majority of them are fully painted in white monochrome where else, some are painted in bichromes. The lowest frequency of figures are those painted figures in black with 0.7%) and all these figures are painted in monochrome.

With regards to the current condition of the artworks in the study, the conservation analyses indicates the biological, physical and chemical threats as the main causes of deterioration in rock paintings. Sun exposure, exfoliations, rain run-offs, animal secretions in form of urine, wasps and vegetation are among those factors that has obscured and accelerated the rate of deteriorations of the artworks. Threats emanating from human activities are mostly minimal with the study areas. However, tourism related activities within the farms has caused a number of damage to the artworks and their sites in form of graffiti from chalking and scratching, continuous sweeping of camping sites grounds, farm roads in proximity to rock art sites, turning rock art sites into camping areas and pouring of oily liquids onto boulders containing artworks. Such impacts caused damage to the paintings themselves and physical setting of the sites hence reducing the sites scientific values. Other human related impacts to some sites have been exacerbated by small illegal mining activities such as quarrying precious stones near rock art sites and erecting fires in rock shelters containing rock art especially in Omandumba West farm.

A number of surface archaeological materials in small and large quantities were recorded mostly in rock shelters, caves and some boulders. Among the surfaces collections are beads, charcoal, ostrich eggshells and pottery fragments, hearth sediments, pestle and lithic materials. The assessment of this variable was of utmost importance in order to establish archaeological potential of sites for further investigations. However, only 8 out of 60 rock paintings sites were considered worthy of future archaeological studies. The surface artefacts are of Late Stone Period however, these were not scientifically analysed therefore, at this stage they could not be direct associated with the rock art since it is not established whether such artefact is from the same cultural authors

6.2. SECTION B: ROCK ENGRAVING

This section consists of four parts. Part A provides the results of the ethnographic/ethno-historic interviews with two local Ju/'Hoan San men, Mr. Kxao /Lukxao, an 80-year-old San man and Mr. N!ani R!kxao, a 45-year-old San men (both from the San Living Museum). The objectives of the interviews was to understand their ancestral knowledge involved in tracking and consequently in the identification of animal tracks/ spoor in the rock-engraving sites. This was important since local San are still involved in tracking practice.

Part B provides the general descriptions, and spatial and statistical analyses of the rock engravings. The general description provides basic descriptive data of the 16/50 engraved panels. It includes the site name, panel number, GPS locations, site elevations, the type of surface (vertical, horizontal or sloped), their orientations; the overall state of preservation of the rock-art station and the figures; its dimensions, some brief observations about its location in the landscape, i.e., spatial distribution, vegetation cover, nearest water points and its neighbouring rock art sites. I have provided data giving a graphic and descriptive content of the site in form of the number art figures and their superimposition (if any), themes, their history, their current state of conservation, as well as the site's associated archaeology.

Part C focuses on the spatial analysis of landscape attributes such as the geomorphological settings of the panels, proximity to water sources, accessibility, the location and visibility of the panels, their orientations, as well as the placement of the artwork on the rock art surfaces. Part D presents the morphological variables of the rock engraving panels recorded in Omandumba East farm. Rock art morphological variables include the prevalence of rock engravings in the study area; the analyses rock art elements and typology, techniques of production, superimpositions/overlapping (if any), element counts, and surface archaeological artefacts present at the site/panel, as well as conservation aspects of panels.

6.2.1. Spatial distribution of rock Engraving site

The engraving site is geographically located between E15°38'53 and S21°30'54 southeast of Omandumba East Farm (Fig. 6.113). The site is located in a riverbed whose terrain is covered by series of Karoo basalt deposit of basal volcanic rocks; they have thickness of approximately 2-30m in this part of the Erongo complex in Omandumba East Farm. The rock compositions range from tholeiitic, fine-grained basalt and basaltic andesite-to-andesite,

considerably altered and commonly amygdaloidal, with vesicles filled with calcite and chalcedon (PIRAJNO 1990). This small outcrop of Karoo basalt deposit forms an intensive escapement in an area of approximately 700m. The engravings are confined to a 400m area where about 420 artwork elements have been systematically recorded. Here, the engraved basalt panels are distributed along the site's two axis (north and south) in a riverbed that covers an area of approximately 1km (Fig. 6.114). The altitude varies between 1334m on the southern slope of the site and 1361m on the northern axis.

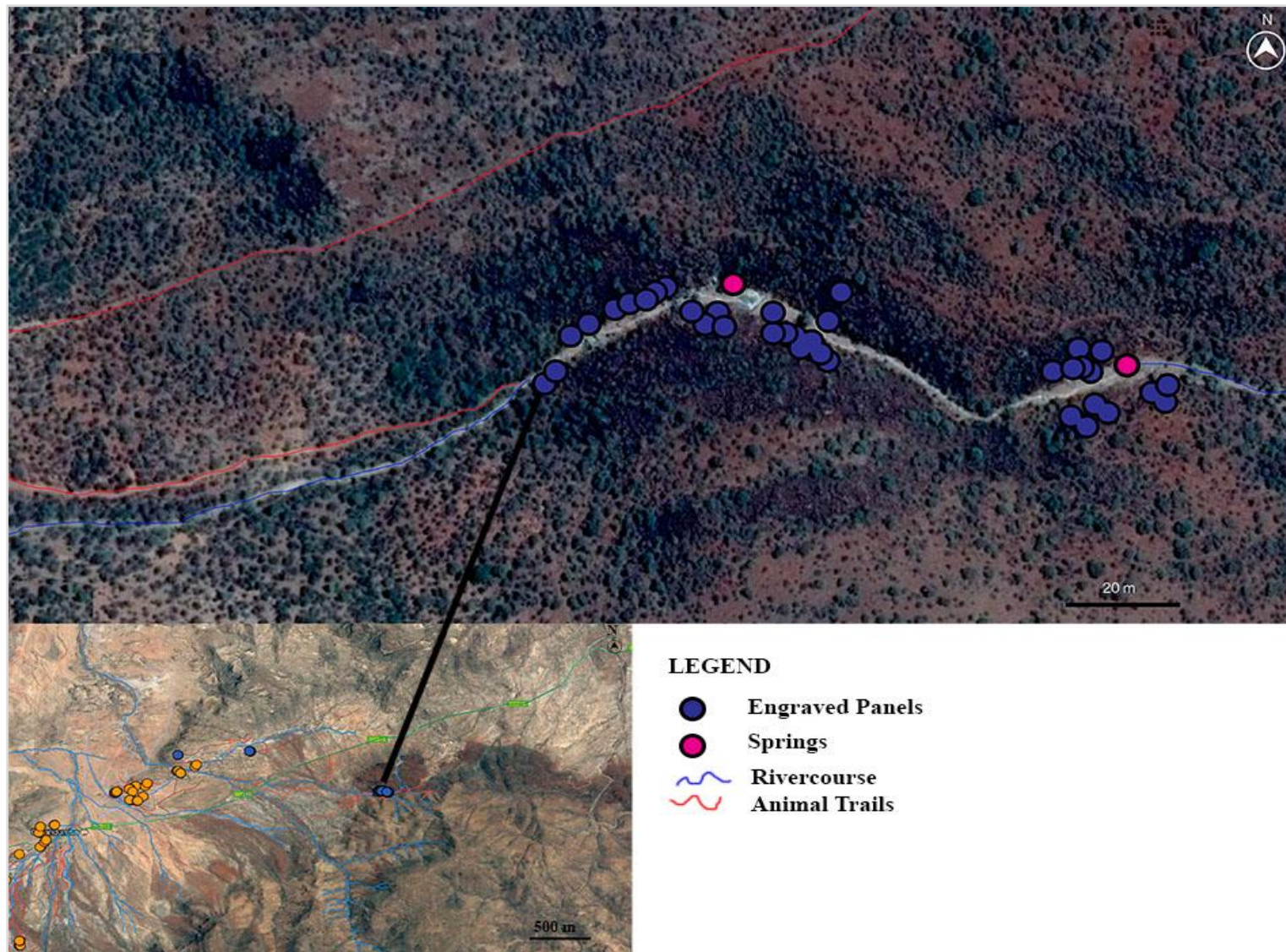


Figure 6.113 Present the distribution of the engraved panels at Site OEF61 in the Omandumba East Farm, map credits: ©Google Earth

Both axes consists of basal flow features flank, a narrow low elevation river rimmed by sun-baked large mass of boulders with a thin layer of reddish iron oxide (possibly desert varnish coating/patina) that has been pecked and abraded to reveal the lighter rock beneath it (Fig. 6.114). The engravings are executed on some these hard smooth dark and brown and reddish basalt boulders on vertical walls (upper slope), on boulders resting at the bottom of the slope and on those found in the river course. The boulders generally differ in dimension and shape (with large one measuring between 2m high and 5m long while smaller one range from 50cm long and 150cm high. These large masses of basalt boulders appear to have been broken off the top of the slope/ridge, rolled down and came to rest at the foot of the slope and, subsequently, on the river course. Most of them appear to be physically stable with hard surfaces, but are responsive to erosion or weathering elements.



Figure 6.114 Top Images show the view of the site from the north with the dry riverbed flowing through between the slopes. Bottom Image: Shows various boulders on the uppermost slope and broad areas beneath the slope with a high density of engraved panels.

It is evident that some of the engraved panels become submerged during the rainy season as we observed rainwater stains on some of the boulders and rock crevices suggesting that the artworks might have been produced in the dry season. Currently, there is no archaeological evidence linking the engravings by association due to absence of surface archaeological collections. If there were, it is possible that the river must have carried them away as there is also no evidence suggesting the possible habitation of the site because of its geomorphological settings.

6.2.2. Selection of engraved panels

The engraved rock surfaces at the site accounts for 50 rock-engraving panels that were recorded and analysed as shown in (Fig. 6.113). The general descriptive data for each panel is shown in appendix 4. About 16 rock-engraving panels were selected among the 50 to represent the overall sites studied as shown in (Fig. 6.115). The 16 panels were selected based on the number of factors: state of conservation, exposure to public visitation, their location, symbolic expressions of the artwork, technique of engraving, placement onto rock surfaces, quantity of the art, superimpositions/overlapping, visibility and accessibility. Consideration was also paid to its proximity to permanent water sources and other clusters of engraved

panels. All the panels are thus considered for the analysis.

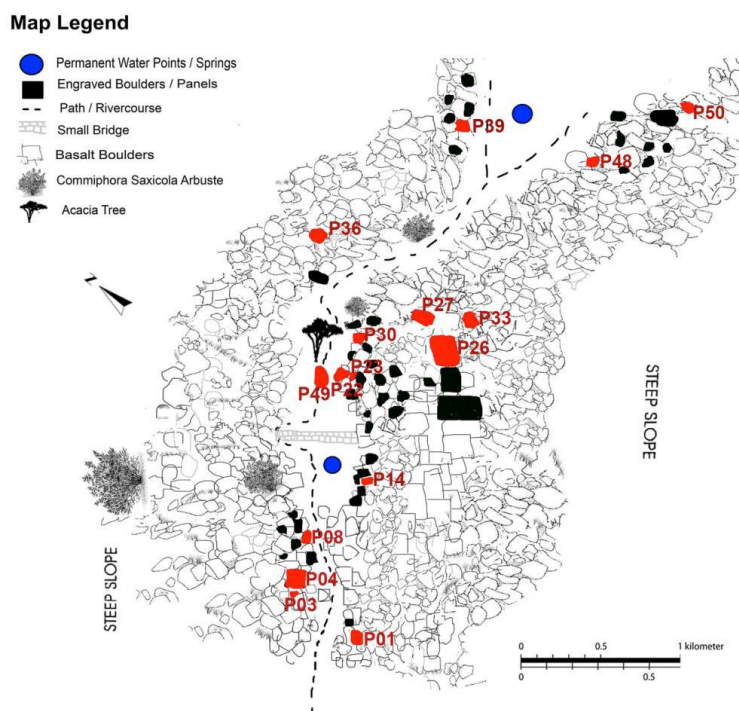


Figure 6.115 Distribution and location of selected 16 rock engraving panels (in red) at sites OEF61: OEF61 01, OEF61 03, OEF61 04, OEF61 08, OEF61 14, OEF61 22, OEF61 23, OEF61 26, OEF61 27, OEF61 30, OEF61 33, OEF61 34, OEF61 36, OEF61 39, OEF61 48, OEF61 49 and OEF



“Animal spoors speak the language that only hunters would understand”
Kxao /Lukxao (80 Years Old, 03rd April 2015, Omandumba East Farm)

6.2.3.Part A: Interviews with local San men

Part A provides the results of the ethnographic/ethno-historic interviews with two local Ju/'Hoan San men, Mr. Kxao /Lukxao, an 80-year-old San man and Mr. N!ani R!kxao, a 45 year-old San man, both originally from the Tsumkwe settlement in Otjozondjupa region, eastern Namibia. The informant's dwells and works as guides in Omandumba San Living Museum for consecutive years now. They are the descendants of hunter-gatherers who are thought to have produced the rock art in southern Africa and tracking of game animal is among one of their main activity in Tsumkwe. The interviews took place at their Living Museum and on the journeys to and from the rock-engraving site. They were conducted between the 03rd - 04 April 2015. The results of discussions are presented in two thematic parts. The first part provides detailed information about their ancestral knowledge of tracking animals. This is important in order to understand how they identify animal spoors. The second part details their knowledge of game animals aided them in establishing the identity of animal spoors at the engraving site.

a. Traditional knowledge of tracking of animal spoor

The San people's knowledge to interpret animal spoor and human footprints is cultivated over a lifetime experiences – from one generation to another. Therefore, the main objectives of this interview were to establish the identity of the engraved animal spoor and also to ascertain whether the selection of animals in the rock art reflect their visibility in the landscape today. Such data would then point to record of either changing or similar climatic conditions of Erongo faunal habitats. The comparison of the engraved spoor were made with the fresh animal tracks found particularly at water points (springs) within the site as well as fresh spoor from animal trails leading into the site.

When asked about the origin art of tracking skill in early time, Mr. Kxao /Lukxao - the older San man, who sat quietly next to Mr. N!ani R!kxao while staring at the rock outcrop immediately behind him replied that *“the tracking must have developed out of necessity, the need for survival, providing our ancestors not only with food, clothing but also with spiritual relationship with the earth”*. The elderly men explained that it is likely that the scarcity of food must have encouraged their ancestors to observe subtle clues left by animals, insects, and even the wind. Through translation, the elderly man pointed: *“I think that our ancestors took tracking far beyond than survival demanded”*. He continued to emphasize that, through oral traditions, their ancestors turned tracking into an art...” *The hunters took pride in their exceptional tracking abilities...however, the Namibian challenging terrains must made life difficult for them”*.

I subsequently asked the Mr. Kxao /Lukxao to mention a skill set of tracking art, to which he replied: *“tracking is a process, it commands patient, team efforts... the hunter needs shelter, water, fire, food and a very strong sense of personal intuition”*. The older man continued to stress that getting familiar with the non- human neighbours is driven by an open-ended desire for a relationship. The two informants informed me that they learned to track animal spoor from their parents and other elderly men in their settlements. *“It's a time consuming activity that require patience' and whose skills are acquired from an early age”*, explained Mr. Kxao /Lukxao (the older San man through translation by the younger informant Mr. N!ani R!kxao). The basic skill that hunters need to have according to our informants is personal intuition. The elder, and skilled tracker, Mr. Kxao /Lukxao explained the sense of personal intuition. He explained that *“listening and understanding a blend of all the other senses helps a tracker to build a more powerful intuitive sense”*. He stressed that these includes wider information –

about the landscape, the wind, the smell of air and plants, the sun, the trees and plants movements; information about the sounds of birds and other animals; visual impressions ranging from the colours of the sky to dampness and dryness of the soil, which all help determine the whereabouts of the animals.

Mr. Kxao /Lukxao, through an interpreter, further emphasised that, in addition to personal intuition, he *needed* to have knowledge and understanding of the territory and its available resources such as food and water in various seasons. *“The trackers need to know the grounds, they need to sense the air, dust and the bare open ground because at some points, he will crawl on his belly when required”* said N!ani R!kxao



Figure 6.116 N!ani R!kxao drawing on the ground while translating during the interview discussions. This took place on the 3rd April 2015, at 15:34pm. The informants wore their traditional attires throughout the interviews.

After a short pause, the elder man Mr. Kxao /Lukxao continued to stress that time spent in the wilderness can teach a person to hear the languages of the animals, plants and ultimately understanding the environment. The elder man emphasized that *“if you listen carefully, nature communicate through many channels, often in discretions... and to understand it, it is important to enter any territory with an open mind, and child-like curiosity”*. Although he seems old, he *pointed* it out that he still tracks around his village. To reach a proficient level of communication with nature, the older man said, *“Trackers must still his mind, spend time*

alone in nature, and openly accept guidance from the landscape”. Mr. Kxao /Lukxao then asked to be excused for few seconds, he then stood up and walked towards the small hut where he picked up his quiver bag and stated working and sharpening one of his arrow while we continue with the discussions.



Figure 6.117 Is Mr. Kxao /Lukx working on his arrows during the interview.

Water being the principal factor, the hunter must take into consideration the types of water sources available and found in that particular area. These include springs, water holes, oases and rivers, plants roots with rich water, as well as animal trails that connect them into the environment. *“They also need to have knowledge of the habits of their prey and their migration patterns to enable them to predict their movements and knowledge of time for animal uses the water points to trap or ambush them”*, stressed Mr. Kxao /Lukxao, further emphasized adding that *“tracking relies heavily on team effort in order to maximize success as it could last for days or even months...the degree of skills required from every tracker include patients, the ability to recognize, identify and interpret the content of animal spoor, i.e., the animal identity, gender, size, possible age and its health condition”*. However, since hunting is no longer a frequent practice among the San communities in Tsumkwe, due to the fact that most San children are sent to school, often in boarding schools, young people had less time to learn and practice the tracking and hunting skills.

Mr. Kxao /Lukxao then gushed about his hunting trips during his early age how tracking and hunting was almost a dream of every young San men man. He face immediately changed when he narrated with disappointments how hunting is no longer allowed in the modern world. “*Hunting activities has been relatively infrequent these years*”, said Mr. Kxao /Lukxao with a weary face. He shifted his eyes to the children playing a little further away and said: “Nowadays, most young San men - school dropouts’ experiments hunting with bow and arrow and spears, but on small animals like small antelopes, i.e., duiker buck and klipspringers as well as other small animals like squirrels and bird within the Ju’Hoansi and Nyae Nyae Conservancy in the Kalahari desert”. The elder San man further talked about how the tracking and hunting has been lost for decades now. I then asked him to explain the intangibility in the art of tracking. While continuing working on his spear, he looked down and appeared to be in deep thoughts and replied:

“Tracking is not just about following the animals, it has something profoundly spiritual to offer. The trackers engages deeply with the ecological niche because human are not the only animal that track. Other animals do too...they have a strong sense of smell that can detect other animals from far and can discern scents left behind by other animals. Like other predictors, trackers can also receive alarms from far, allowing them to be aware of the prowling ground predators”. For trackers, these abilities border on the spiritual gods yet they are completely natural”.

He then stressed that these set of intuitive qualities are less understood by the younger generation today. In a conversation with Mr. N!ani R!kxao, the young informant, who translated, said: *Nowadays, sometimes we track leopards, big antelopes and rhinos here in farms on foot to locate them so we know they are safer from potential poachers. It is really easy, and it becomes easy when you know the animal habitats and its footprints”* beaming Mr. N!ani R!kxao. He continues to point it out that, knowing animal, its sounds and spoor is very important. I *then* shifted our discussions to the skills needed in identifying fresh animal spoor. This was necessary in order to understand how the local San men will be able to establish the identity of the engraved animal spoor at the site. For this, the first argument that the local San men stressed was the need to understand and establish the various habitat types of different animals in the environment, as well as establishing the movement activities of the animals, i.e., which animals are active in a day or at night.

The informants further stressed that knowing the animals, their natural habitats and their movements is very important regardless of the conditions in which the animal spoor will be found. The younger San interpreter pointed it out that there are various dynamics that can

influences the quality of the spoor and these and these include the type of ground/ terrain, vegetation cover, wind and rain built up, the presence of other animals prints, age of the spoor, age and pace of the animal, i.e., running, walking or standing etc. When questioned about how he identified fresh animal spoor, Mr. Kxao /Lukxao said:

“For me to identify the spoor, I have to know the animal identity and its behaviours, how it moves, whether it’s healthy or sick, running, sitting or walking, where its likely to be, its scent (both faeces and urine)”. The older informant continues to elucidate that he can also tell the age of the animal...”

Usually smaller animals have smaller prints, their spoor tend to be shallower unlike the larger animals, their pace also tend to be shorter, and often in juxtaposition to a larger print, then I can even know the gender of such animal.” I then asked the older informant what kind of animal species he could identify and was familiar with, to which he replied contentedly: *“Various antelopes such as (springbok, eland, kudu, klipspringer and duiker bucks) as well as elephant, rhino, giraffe, zebra, snake prints, and even leopard and lion”*. He stressed that knowing the print is to know the animal droppings and their scents, as well, which he explained always adjacent to its spoor prints.

On the identification of human footprints, N!ani R!kxao gave an example: *“I can identify human footprints of an individual person, and however, in order to do this, I have to be familiar with that person’s prints. I will then be able to tell that a footprint belongs to someone I know or not”*. He stressed that the skill used in identifying spoor are similar to that used in human footprints. He then pointed out that he would not be able to identify a stranger’s prints until he had studied it carefully for some time. When asked if they are able to distinguish between men and women footprints, the elderly man replied *“It depends on the quality of the footprint, in case of women, they tend to have smaller, shorter and narrower feet with high arch and a shallow first toe, as oppose to men who have longer, more robust and very broader foot in shape and size”*. He then continued to emphasize, *“Both size and shape of every person’s feet differ in so many ways. For instance, people with a slender body are most likely to have slender feet, while those who are larger and short are most likely to have broader feet”*. N!ani R!kxao said that *“generally, individual footprints are often defined by the way a person walk”*.

He elaborated further *“Other particular foot characters, i.e., its arch, lateral side, the toes and the ball of the foot are also unique in every person when they walk hence it can be used to identify his/her prints even in difficult environments”*. When asked about the possibility of

distinguishing adult footprints from those of children, both informants found this question amusing. They replied that “*often the physical morphology in terms of size and shape will tell, the placement of the children/infant footprints are always juxtaposition with an adult print and are rarely found in isolation*”.

The discussions of the human footprints concluded the first part of the interview as it was getting late.

b. Identifying animal spoor at the site

The previous discussion at the San Living Museum led us to the journey through Omandumba farms and up hiking the hills, slopes and crossing the riverbed to reach the goal – the rock art site. As we hiked towards the site, we once again began our discussions about the subject of tracking, hunting and rock art in general and paid particular attention to the landscape, taking notes and photographs along the way as the informants explain various landscape features, i.e., water sources, animal trails, vegetation cover in different seasons and largely, the movement of animals in this terrain. The older informant, Mr. Kxao /Lukxao talked about how a typical visitor goes to this site to look at the art, and pay very little attention to its surroundings. They had to decide, among other things, not only where to navigate, where to look for resources, but also where to place the rock art and where to view it. He emphasized that they might not be able to identify every single figure at the site; they could only inform us what he they knew.

Hiking for about 15 minutes, the temperature gradually began to pick up again and the heat began to take toll on us as we continued to hike. However, as we walk towards the engraving site, the older San man warned us to speak low since he seems to have sensed animal movements in the direction of the site. He warned that animals often use the site in the morning and late afternoon to drink water from the two springs. We then walked in silence as close as possible to the San informants who carried their bows and arrow for protection. As we descended into the riverbed, we noticed couple of kudus and springboks running towards the northern slope of the site; they must have heard our movements. When we finally arrived at the site, the informants began to inspect the site for other animals and climbed on top of both site slopes to see if they could spot any animal or potential predators around the site.



Figure 6.118 In front of me are the two informants Mr. Kxao /Lukxao and N!ani R!kxao hiking barefoot towards the engraving site. Photo credits: Fousy Shinana.



Figure 6.119 In front are the two informants Mr. Kxao /Lukxao and N!ani R!kxao, as well as my colleagues, Mrs. Fousy Shinana and Maria Mwatondange entering the engraving site.

After inspecting the site, we subsequently began with practical discussions and examinations of the engraved animal spoor and human footprints, identifying the fresh animal spoor that were found in the muddy grounds at two water points, as well as the faeces and urine of the

animals found in the site. After a careful and thorough investigation of the depicted engraved animal spoors, the informants thereafter recognized and identified some of the engraved spoors and were quick to point out that those that they recognized those mirrored the compendium of local fauna found in the same environment today such as rhino, giraffes, Oryx, elephants, springbok and duiker bucks. Some were compatible with the fresh spoors found near two springs at the site. During these examinations, we took field notes, photographs and video recordings of the informants identifying the spoors.



Figure 6.120 Seen here are two informants Mr. Kxao /Lukxao and Mr. N!ani R!kxao examining the first panel OEF61/01 at the site.

The informants were intrigued by the fact that there were fewer engraved boulders than unengraved boulder surfaces, and made the assumption that it was likely that only a small group of people might have used the site. As they continue to identify the rock art content, our informants came to Panel OEF61/08 and were intrigued by one particular figure on the panel with visual resemblance of a bird, which they could not identify. Speaking through the interpreter, the older San man, Mr. Kxao /Lukxao tried to explain what the figure look like. *“It looks like tree, but it has two legs and a body that resemble an ostrich...I am sorry but I don’t know what it is...but I can tell you the spoors next to it”*. He informed us that he didn’t know and caution that I write exactly as he interpreted it. He continues to point it out that *“the unknown must be written a such, unknown”*.



Figure 6.121 Mr. Kxao /Lukxao and Mr. N!ani R!kxao examining Panel OEF61/08.

It was interesting to observe that when the informants were studying the fresh spoor found at two water points (springs), it evoked thoughts of tracking immediately as they began to follow the animal spoor out of the site and, following their trails, they were able to predict the direction and whereabouts of the animals. After a while, the elderly man started to investigate several sets of footprints in a particular spot and evidence of spoor trampling, urine and faeces found near one prominent Panel OEF61/04 and suggested that the animals usually sleep at that spot. *“Some of the droppings are fresh, the urine smell is very strong, and they must have slept here”*.

When asked if he could identify the animal, he said: *“Yes, these are droppings of the springboks, look there...they sleep here for long time, you see the humus, they sleep here for sometimes now”*. The fresh and some dried-out animal droppings found at this particular spot according to the San men corresponded to the fresh spoor, which they have identified as springbok.



Figure 6.122 Shows the area where the springboks supposedly overnight.

Through translation, the elderly man explained that the identification of these spoor was not only based only on the evidence of the spoor and the droppings, but also on their knowledge of the animal's urine scent, which according to him, is familiar because springbok is found everywhere, and is a common hunted animal.



Figure 6.123 Mr. N!ani R!kxao (the young informant) inspecting fresh animal spoor near the first spring from the entrance of the site. View from the northern slope.

It was also evident that most of the animals use the same trails, which subsequently dispersed and branched out from two water points in the site into the landscape into further smaller trails. These trails are so narrow and regulated by frequent animal movements, especially during the dry season when the water points in the Erongo Mountain become limited. Keeping in mind the difficulties of interpretation of the rock art and the site functionalities, we questioned our informants some controversial topics. Our informants seem not to have any cultural knowledge of the meaning of the artwork other than the depiction of the animals chosen.

However, they were quick to point out that the two water points were two key important elements in all this. They stressed that knowing Omandumba terrain very well, the scarcity of water especially during dry seasons in this area meant that this site was not only important to the animals but also to the people.



Figure 6.124 some of the fresh antelope spoor identified by Mr. N!ani R!kxao (the young informant).

Since the site and its surrounding area is entirely covered with hard stones, this became challenging for the ancient hunters to virtually follow and discern animal spoor in this environment and instead chose to wait for the animals at the point and ambush them instead of tracking them, which means that knowledge of the terrain is vital. During dry season,

“Both groups must have competed for the water hence the animals might have been ambushed and hunted by the people who used the site then the site became not only a water point and a strategic hunting locale but also a cultural site where art was produced” stressed the older San informant.

The informants pointed out that *“This site was a hunting ground”, where hunters not only ambushed and trapped animals but also taught their children how to hunt that is why you find children’s footprints with that of adults and the hunters were taught to identify animal spoors and decode them accurately”* Mr. Kxao /Lukxao added” *“Such skills even enabled them to distinguish between a spoor of a wounded animal and that of the rest of the herd”* stressed Mr. N!ani R!kxao.

This is consistent with the preference in depicting spoors rather than figures, since the tracks are to be followed in the hunting processes. Furthermore, the two San men explained that dominance of the small antelope spoors signified the preferred hunted animals, because they were not only easy to hunt but they were also easy to carry to the shelters where they lived. Therefore, the preference for antelopes may have also a symbolic meaning, as interpreted in Portugal in the case of deer depiction predominance: human/deer symbiotic relations evolving into symbolic isomorphism between human and deer behaviour, which could also be the case for antelopes (CAMURI, FOSSATI et al., 2002; IGNÁCIO 2009; OOSTERBEEK, ALMEIDA et al., 2014). Once we finished discussing and examining animal spoors and figures, as well as some of the indeterminable figures, we began discussing human footprints at the site.

Generally, the informant had little knowledge about the footprints because they stressed that to know an individual’s footprints; one must be familiar with the person first. In a discussion with the older San man, he emphasised that *“these footprints could belong to anyone, they might have belong the artists, or hunters or his family or even their community”* while pointing at a set of various footprints at Panel OEF61/14 showing various human prints in different shapes and sizes), or prints of the gods or heroes...*I cannot really tell”*, stressed the older informant. They however, established that the prints seem to be nearly life- size representations of human footprints. Examining the sizes of the prints, he uttered: *“The smaller one might be of children, the medium sized one could be of women while the larger one might represent a male”*. Like with the animal spoors, Mr. N!ani R!kxao was of the opinion that: *“sometimes the size of the engraved print might not necessarily represent or point to the age of the person”*. He further explained that: *“the artist (s) might choose to*

engrave a small human print and that print could represent an adult and not necessary that of a child...it's a complex situation”.



Figure 6.125 Mr. Kxao /Lukxao examining human footprints at Panel OEF61/27. The panel is located upper part on the southern slope. The artworks can be seen while standing in the middle of the river course.

He told us to be careful when we categorised the prints. When asked about why some human footprints have been juxtaposition had been juxtaposed to animal spoor, Mr. N!ani R!kxao replied:

“I cannot really tell, but in order to decipher and understand the spoor and footprints, you have to know the context in which they were created...you have to understand the site context. This site was a hunting ground, and in that context, animal spoor and human footprints are two key visual signs in the art of tracking and ultimately hunting” ...

He further clarified that human footprints are agents of our mobility and freedom as human being. While examining the site southern slope of the site, the older man continued to say: *“Our feet allows us to move, to navigate the world, to gather food, to hunt, to stand up, to be able to do all activities and so forth...so they are placed together with the animal spoor to indicate a inter relationship between human and animals”*. He further offered some explanation for the presence of human footprints at the site: *“signal that our ancestors where here, that the rock art was made by the people, they may also indicate that people prey on animals, more specifically on the animals shown in rock art”*. His final remarks on the subject

were that “*human cannot survive without animals, as animals are food*”. After we finished examining all the engraved surfaces, we drove off to locate some of the rock painting sites.



Figure 6.126 With me is Mr. Kxao /Lukxao and Mr. N!ani R!kxao and my colleague Mrs. Fousy Shinana after examining a panel with human footprints at Panel OEF61/36. Photo credits: Maria Mwatondange.

c. Summary of the interviews

By examining all the individual animal figures and the spoor depicted at the engraving site, the cumulative counts of all depictions contains a total of 458 elements, comprising of 34 human footprints, 364 animal depictions of which 334 were animal spoor, (see Part D - engravings morphological variables) and other depictions counts. The local informants were able to identify all the 334 (91.8%) out of 364 of the animal species depicted. They identified the depictions based on their intimate knowledge of the local fauna spoor, through the assessment of the representational quality of the figures, in particular with respect to the correct depiction of anatomical features of animal figures and by comparing the fresh animal spoor species found in the site and those found in the animal trails leading into the site. It is therefore safer to suggest that identify elements of the pictorial record clearly reflects the compendium of local fauna found in the same environmental conditions today. Its therefore high possible that the engravers were creating the artworks based on wild fauna they observed and possibly hunted in the same landscape.

However, while the informants were identifying the spoor, I found out that that both of them would often identify the same spoor in a different way. Each person made decisions almost idiosyncratically – one relying largely only on size and shape, and the other ignoring size to make identifications based on shape alone. During these identifications, they would then go back and forth to the fresh spoor at the springs as well as in the animal trails to confirm the identity of the animals. At the same time, I also tried to match engravings against the field guide guidebook to southern African animal tracks by Louis Liebenberg (LIEBENBERG 1990) in order to address the uncertainty. One critical problem mentioned by informant while establishing the animal species from engraved spoor was that the actual footprints from a single taxon (i.e. antelopes). They vary considerably in shape and size hence made it challenging to establish. Once in doubt, the informant would often depends on the substrate of fresh spoor on the (soft mud versus hard ground - at the springs). The same problem arises when the informants were identifying human footprints. Some human footprints are well proportioned in size and shape and with correct digits but some were either too small with missing toes while others were simply not proportioned.

As a result, there were variabilities in asserting both spoor and human footprints. Such variability was rated. However, in the midst of these challenges, the informants were able to estimate the age and sex of individual animals from the fresh spoor but not that of engraved

spoons. They suggested that some of these variations might have been deliberately produced to attest to the keen tracking abilities of the engraver, hence complicating the identification process.

The cumulative counts of all the identified spoors figures indicated the dominance of antelope spoors. These may have been of symbolic or economic importance for the engravers hence dominated the rock art, it is also possible that they might have been plenty in the landscape. The larger fauna such as elephants, rhino, giraffes and zebra also form part of the spoors corpus albeit in small quantities.

The engravings therefore provided record of the climatic conditions and faunal habitats of the Erongo Mountains. Through this analysis, one can therefore safely assume that species continuously occur throughout the Holocene climatic periods. An assessment of the accuracy of anatomical features clearly showed that both engravers and the local San men had intimate knowledge of the depicted species. The close match between engraved animals and fresh animal spoors at the site confirms that the engravers depicted animals that were present in the surrounding landscape. The comparison between the engraved animals and animal spoors and the painted faunal in rock paintings sites in the area has produced corresponding findings. Both animal repertoires are dominated by a high frequency of antelopes' species. The preferential depictions of these animal species may have symbolic, economic or environmental value to the engravers and painters.

In order to address challenges that arose from the identification of spoors figures, the certainty of each species determination was rated. A score between 1 and 4 was assigned to all animal spoors and human footprints' identifications, where 4 indicates an uncertain identification, and 1 high confidence, see (Table 6.14).

Score	Certainty	Number of depictions
1	High	378
2	Medium	13
3	Low	18
4	Figures Uncertain	49

Table 6.14 Amount of confident and uncertain identifications

Regardless of these differences, the depictions contained sufficient detail to allow categorisations of elements into four groups namely; anthropomorphic; zoomorphic and abstract forms while figures with uncertainty were lumped together in the indeterminate category (see Table 6.22 and Fig. 6.175). About 411 depictions were identified with range between high and low confidence. This constitutes 90% of all recorded engravings while 47 figures, which represent 10% of the total corpus, were identified positively. The identifiable engravings largely correlate with the more naturalistic depictions, while those ranked in medium and low rate depict figures with very basic details often with some body parts omitted from the figures (i.e. legs, tail, toes, heel, eyes or ears etc.). In case of the animal spoor, those that have been omitted shows for example only one hoof (not in pairs) or the others hooves might even be played out onto other spoor.

Although the faunal remains of the from the excavations of Leopard Cave and Fackelträger Shelter are comparatively well documented, the available dates and animal identifications cannot provide time spans for the local occurrence of each species. I therefore have to accept that species continuously occur throughout climatic periods similar to the current climate in Namibia. The involvement of local San men who are experienced trackers provided valuable information and allowed identifications of the animals spoor in the study to which the researcher would otherwise not be able to establish on her own. Given the absence of Zooarchaeologists in Namibia, this case proved that indigenous traditional knowledge of people whose ancestors are said to have authored prehistoric rock arts could successfully be applied to complement scientific research into rock art.



“It’s not just a set of footprints, they were here, our ancestors where here”, Kxao /Lukxao.

(4th April 2015, Omandumba East Farm)

6.2.4.Part B: General Description of Engraved Panels

The following section provides the summary of the general description of each engraved panels containing both animal depictions (spoons, figures and handprints), human representations in form of footprints, as well as abstracts and indeterminate forms recorded in this study area. As with rock paintings, the engravings’ basic descriptive data includes the panel Id, GPS locations, panel elevations, the type of engraved surfaces, panels’ orientation and their dimension, some brief observations about its location in the landscape, i.e., spatial distribution, proximity to previous panels and water points and, generally, its locality. We have provided data giving a graphical descriptive content of the site in form of the number art figures and superimposition (if any), themes, their location on the engraved surfaces, as well as their current state of conservation.

a.OEF61/01

Panel Id: OEF61/01

GPS Locations: E15°38 51.71/S21°30 55.07

a.1.Panel Description

The first panel *OEF61/01* in the rock-engraving site is a dark to brown stable boulder standing horizontally and located on the southern axis of the site overlooking the riverbed and it is found immediately upon arriving at the site (Fig. 6.128). The panel stands at 1344m above sea level and is oriented 42°N with a dimension of 110cm long and 160cm high.



Figure 6.128 Shows the location of Panel OEF61/01.

The panel is in proximity to the hiking trail in the site and its placement in this particular location is associated with the adjacent cluster of panel found a few meters from it. Due to its proximity to the river course, it is possible that the panel becomes submerged in the water: there is strong evidence of water stains beneath the rock panel surface. In terms of its stability, the primary concerns with the panel revolve around the pressure of the other boulders placed on top of this panel, which eventually resulted in the fracturing of the panel (left side) and ultimately splitting of the panel. Furthermore, the panel has good visibility owing to the

natural color, its texture, as well as the engraving technique where the artworks stand out against its surface. The panel offers enough room for artworks, but very few engraved figures have been executed on it leaving most surfaces without artwork.

There is no evidence of associated archaeology near the panel or elements of superimposition. Here, one form of engraving technique was used in the production of the artwork, namely the light pecking that reveals a lighter rock beneath it. This technique is very simple as it involves pounding this basalt rock surface repeatedly and continuously using maybe a crudely pointed stone or tool until the desired shape of the figure is achieved. The depth of the pecked marks is quite shallow as a result of the hardness and compactness of the basalt rock, which is often resistance to striking.

The artworks are only visible within a distance of 3m from the hiking trail, but an untrained eye could miss it, as the panel's height from surface is limited. The panel's repertoire included a total of 10 engraved figures placed slightly to the right with few recorded on the left of the panel. The artworks that predominant predominated are animal spoor and some individual pecked marks. Among the recognisable recorded artworks are 3 individual pecked animal spoor depicting one zebra spoor measuring 7cmx7cm and facing downwards, two klipspringers spoor facing upwards and located few centimetres from each other, but beneath the zebra spoor measuring 5cmx3c, 4cmx5cm, as well as seven other indeterminate animal spoor whose identity could not be established as a result of conservation challenge (these figures appear slightly blurred). These indeterminate figures are restricted to the eastern side of the panel near the large fracture, while the other few are placed near the recognised spoor.

b.OEF61/03

Panel Id: OEF61/03

GPS Locations: E15°38 51.87/S21°30 54.91

b.1.Panel Description

The third panel in the site is located on the southern axis of the site and measuring 114cm long and 80cm high (Fig. 6.129). The panel is standing at 1354m above sea level facing 141°SE and is overlooking the southern side of the riverbed and the entire northern view of the site.



Figure 6.129 Left is Panel OEF61/03 (red arrow) indicating its location in the site. Right image shows the depiction of a small duickerbuck

From the previous panel, the panel is accessed through a short walk crossing the riverbed and the hiking trail towards east of the site until just before reaching one of the prominent panels in the site (Panel OEF61/04), which has a good visibility. The panel has extreme low visibility owing to its natural dark colour and the fact that the light-pecked engraved animal figure matches exactly the colour of the panel, making it difficult to find. Here, we registered the second form of pecking technique employed at the site. The shape of the figure was outlined and only few parts of the inner figure (hind legs and part of the animal head) were in filled with pecking marks, probably to distinguish or reemphasize the most important part of the animal. Moreover, the panel is upright and sloping backwards underneath a shiny dark massive boulder beneath it, which stands stable on the ground.

The panel has only one fully engraved animal figure shown in a lateral view and depicting a small duickerbuck measuring 23cmx16cm in size and oriented west – the entrance of the site.

The figure occupies the right upper part of the panel and it is positioned near a thin winding lineal fracture right in front of the animal, an the impression that there is an interaction between the engraved surface and the figure, this as the figure appears to be walking towards this rock crevice in an attempt to define a sort of landscape context.

c.OEF61/04

Panel Id: OEF61/04

GPS Locations: E15°38 52.97/S21°30 53.91

c.1.Panel Description

By far, the best-known and easiest to find is Panel *OEF/04*, resting in the riverbed at an elevation of 1349m and holding an excess of 57 depictions of striking antelope spoors of varying in sizes (the largest spoor measures 8cmx8cm while the smallest one 2cmx1cm –(Fig. 6.130).



Figure 6.130 Left is Panel OEF61/04 (red arrow) indicating its location in the site.

The panel is a second panel located on the northern axis of the site. And it is easily accessed through walking in the low riverbed from the previous panel following the horizontal walls of the riverbed on the northern axis of the site where about six sites from this panel are also found. Its artwork covers the entire rock face measuring 216cm long and 147cm high while the panel faces 45°E view.

Among the engraved animal spoors, springboks are predominant, accounting for thirty eight (38), following the springbok spoors are the eight 8 each zebra spoors, seven 7 kudu spoors while giraffe spoors account for four 4. The panel is highly visible in the landscape at the distance of 15m range, this being attributed to the fact that the engraved surface is out in the open and it produces a lighter colour beneath, making the artwork stand out from a reasonable distance. The surface of this brown boulder has many irregular fractures, as well as a fresh scar that has broken off the top right of the panel, but generally does not seem to affect the stability of the boulder.

This vertical boulder is attached to other large masses of boulders facing south and it is possible that the weight of these boulders pressurised the panel, which ultimately broke the panel. Its current location in the riverbed suggests that became submerged under the water during the rainy period, as evidence of water stains is visible from the main panel. There are various shrubs growing around the panel but fortunately they do not impact the panel except its visibility especially shortly after rainy season. There is no evidence of associated archaeological remains at the panel, neither in the panel nor superimposition.

However, about 2m west of the panel, we found small antelopes faeces coupled by wet and dry urine, as well as fresh small antelope spoors suggesting that animals either spend a night (to shelter an animal from the strong wind) or during the day (to shelter animals from scorching sun) or perhaps as a temporary resting place for the animals coming to drink water in the spring 10m away from this panel (bottom right). Here, one form of technique was used in the production of the artwork; namely, the light pecking that reveals a lighter rock beneath it using maybe a crudely pointed stone. The fact that the panel lay in the riverbed suggests that the artwork might be authored during the dry season when the stream is not flowing.

d.OEF61/08

Panel Id: OEF61/08
GPS Locations: E15°38 53.78/S21°30 53.68

d.1.Panel Description

Panel *OEF61/08* sits on a small triangular boulder (Fig.6.131) with a dimension of 66cm long and 20cm high sitting on top of smooth basalt surface but at the bottom of its surrounding boulders facing 184°SE on the northern axis of the site at an elevation of 1336m downstream. The panel has two projecting faces, but only one is engraved. The panel has very good visibility and can easily be recognized from a vantage point.



Figure 6.131 Left is Panel OEF61/08. Left image shows its location in the site. Right image shows the engraved depictions.

The surface texture of the panel has two different colours: the upper part appear to be worn-out, lighter with minor exfoliates while the mid to lower part appear darker, harder undamaged. Nonetheless, the panel is in remarkably good condition, especially for being in the direct flow of water during rainy season. However, its upper part shows evidence of a large scar indicating a previous break off damage. Even though we were aided by the local

San men to identify animal tracks, figures of undetermined figures were not deciphered because they seem not to know what they meant. The intriguing figure appears to look like a wiggly ostrich with two heads.

The panel had a total of seven zoomorphic spoors that occupy mostly the middle to upper part of this small boulder. The spoors measure between 5cmx3cm and 3cmx3cm in size, while the bird-like figure or, rather, an unidentified figure one has a dimension of 39cmx12cm respectively and occupies the entire middle of the panel with the small spoors placed left, right and mostly top of the bird-like figure. The animal spoors have been identified as three klipspringers and three warthogs. Almost all the spoors are facing up, with the exception of one klipspringer spoor that faces down. The figures are all lightly pecked, but the undetermined flower or bird-like figure is deeply pecked. There are various uncounted individual pecked marks surrounding this figure, in particular from mid to lower bottom of the panel.

e.OEF61/14

Panel Id: OEF61/14
GPS Locations: E15°38 54.49/S21°30 53.9

e.1.Panel Description:

The first panel containing human depictions (representing different individuals) is Panel OEF61/14 located approximately 15m from the site entrance and resting on top of the Panel OEF61/13, which has a dimension of 160cm long and 47cm high and is at an elevation of 1352m above sea level.



Figure 6.132 Panel OEF61/14. (1) Shows its location the site, (2) shows the depictions, (3) is traced image of the panel.

The panel is accessed through a very short walk from the site river course towards the southern axis immediately at the first spring of the site. It's a small dark to brown stable and rectangular boulder resting on a low-lying stable boulder immediately above the natural spring (Fig. 6.132). Other five panels containing predominantly animal spoor flank the panel. This brownish panel is oriented 09°N views, hence it is exposed to the extreme sun throughout the day. Being one of the prominent engraved surfaces containing human depictions, the panel's repertoire registered an excess of eighteen fully pecked depictions that occupy the entire surface of the panel. The panel and the artworks generally commands a great view in the landscape and are visible from a distance of 15m due to the fact that the dark brown engraved surface revealed a lighter color beneath. Documenting the panel was challenging during both survey campaigns given the fact that the panel is located in proximity to the spring, which is still used by animals especially in the summer.

During these recording episodes, various animals such as duiker bucks, springboks, Damara dik-diks and oryx came to visit us. Often when the animals are not found at the spring, their fresh spoor are always visible near the spring. The artwork at the panel has been lightly

pecked with their cortex removed and with slight variations of pecked marks in size and depth. This technique was accomplished either through the direct use of a pointed lithic tool or quartz or with a hammer and punch or combined by placing such a tool perpendicular to the panel.

Among the 18-recorded artworks are twelve striking human footprints varying in sizes and shapes measuring between 22cmx10cm, 13cmx9cm, 13cmx7cm, 14cmx4cm, 11cmx4cm, and 10cmx4cm in size. They occupy the entire panel, with a large foot located in the middle and with the smaller one restricted to the bottom of the panel. All the footprints are facing up and in association with each other. Among the footprints, eight to represent adults, one most probably a young person as well as three infants. Such identification is merely based on the physical morphologies of the footprints; it is also possible that some of these prints might not even be human, especially those with incomplete toes or digits that are pointy and with the absence of a foot arch. Of the twelve human depictions, only 2 have complete toes, about 6 are four toed, and an additional four registered only three toes. Moreover, it is also possible that the right foot is likely represented here as indicated by the location of the large toes and the position of the foot's internal, lateral and medial longitudinal arches. In addition to the anthropomorphs depictions, about two animal spoors depicting one buffalo and one warthog were restricted to the western edge of the panel.

The last category is of indeterminate figures, which account for four 4 pecked marks of varying sizes placed among the figures. The local San men from the San Living Museum identified the panel's depictions. No superimpositions were observed at the panel other than the fact that the artwork has been juxtaposed on the same panel. However, the panel is adjacent to other worked surface at the bottom, left and right, which contains only animal footprints. With regards to the spatial placement of the panel, it is ironic that the first panel containing human footprints is found immediately at the spring with an equally powerful visual impact, although there are other engraved panels in the immediate locality. This suggests that the spring must have been reliable, hence significant to both animals and humans who must have shared this scarce resource that sustained them particularly during the dry seasons. As a result, its significance must have been recognised with the prints of human and animals.

The current condition of the panel and its artworks is rather good given the fact that the site does not receive a high influx of visitors, and those that visit the site are usually under strict guidance from the farm owners. The boulder hosting the panel is very stable and appears to be not affected by the animals that normally rub their bodies onto other boulders because this panel is elevated from the ground, so this do not affect the artwork. The other concern was that, there are two fairly small fractures or fissures running horizontally across the panel cutting the two figures, possibly caused by higher extreme sun exposure or other inclement weather conditions, leading to a certain degree of superficial damage.

f.OEF61/22

Panel Id: OEF61/22
GPS Locations: E15°38 55.85/S21° 30 54.32

f.1.Panel Description

Situated on top of a low-lying slightly flat horizontal boulder partially submerged in the riverbed is Panel *OEF61/22* standing at 1355m above sea level. The panel is located approximately 10m easts from the previous panel and rests on the riverbed. Walking through the riverbed accesses the site. It's a large basalt boulder measuring roughly 4m long and 6m high and oriented 41°N, while its figures are facing upwards and leftwards (Fig. 6.133).

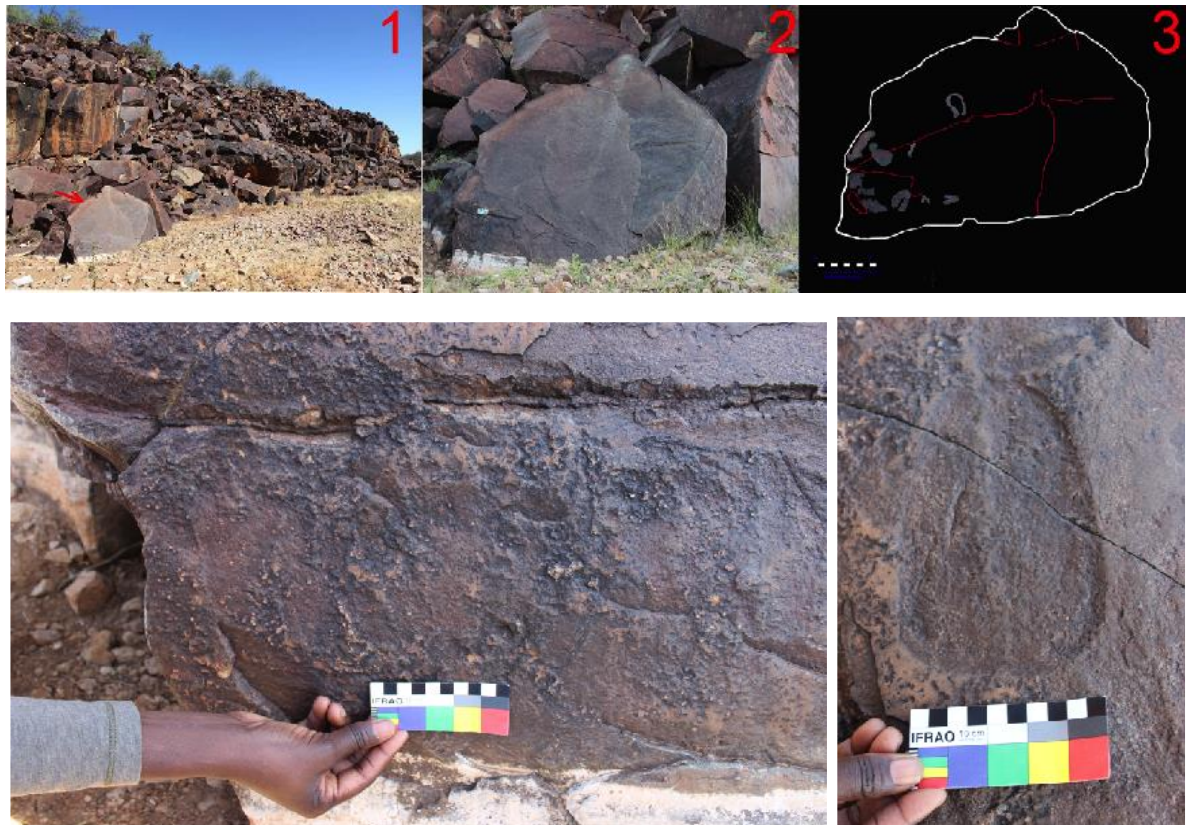


Figure 6.133 Panel OEF61/22. (1) Shows its location in the site, (2) shows position of the figures (3) is traced image of the panel. Bottom left and right shows some of the engraved figures on the panel.

The artworks occupy the right bottom of the panel and we observed that they become submerged in the water during rainy season. Although the panel commands a great view in the site, its artwork's visibility is restricted to only 1m range given the fact that the engraved surface remains very dark, which produces no contrast, and the fact that the size of artwork is very small. This in combination with the technique of engraving obscured the artwork. An untrained eye can easily miss the artwork on this panel especially during day light because the

panel becomes shiny and the fact that it's located in proximity to the hiking trail in the site. The artworks at the panel were firstly pecked, with clear visible peck marks and then smoothed 'polissoir' either by the artists or as a result of weathering, this given the fact that the engraved part of the panel becomes submerged in the water during the dry season.

The panel's inventory recorded a total of 14 engraved figures most of which have been juxtaposed together without contact and which comprised of a pair of 2 very small human footprints measuring between 4cmx3cm and 5cmx7cm length and width respectively placed at the extreme bottom of the panel and appearing to represent two right feet probably belonging to two individuals and placed 5cm apart but on the same level. Moreover, their toes seemed to be of equal size and shape but neither foot had a foot arch. The left foot is six toed with a pronounced internal or concave arch and appears to be connected to a small animal spoor (2 duiker bucks) at its left heel side while the right foot is placed without any associate spoor. Both feet suggest movement and appear to be moving into a small fracture (which may represent a landscape reference) located immediately above them and measuring 15cm in length. In addition to human representations, we also recorded ten animal spoors including one (1) prominent giraffe spoor measuring 18cmx10cm, about five springbok spoors measuring between 12cmx9cm and 5cmx4cm, one zebra spoor measuring 10cmx5cm, four duickerbuck spoors measuring between 8cmx7cm and 7cmx5cm, all located at the bottom left of the panel.

The panel's inventory further recorded two 2 lineal figures flanked among the spoors figures as well as additional 2 indeterminable figures in dotted circular motion just below the panel, but in proximity to the other artworks.

The panel has a strong stability overall but the surface is slightly compromised as revealed by the fading of the art, possibly attributed to its downstream location and the south-facing aspect. The panel itself, though small and stable, has a one prominent fracture that runs vertically through it that might cause future concerns. During heavy rains it is probable that part of the panel becomes submerged in the water, as water stain is still visible. There is no form of associated archaeological content at the site other than the artwork itself. In terms of conservation, the panel is exposed to the sunlight throughout the day to the point that most figures are not visible at certain times of the day; its position makes it susceptible to damage by people walking on it unintentionally.

g.OEF61/23

Panel Id: OEF61/23
GPS Locations: E15°38 55.91/S21°30 54.26

g.1.Panel Description

Resting immediately on the eastern rear view of the previous Panel *OEF61/23* is the *Panel OEF6123* (Fig. 6.134). This vertical angle positioned boulder stands at 1355m above sea level. It measures 94cm long and 17cm high and is oriented towards 176° S. It's a very dark panel with low visibility on the landscape similarly to its artwork content due to the direction it is oriented and the technique of engraving.



Figure 6.134 Panel OEF61/23. Left image shows its location in the site while the right the engraved figures on the panel.

The panel registered only 1 of the intriguing single figures with a visual resemblance of a Middle Stone Age (MSA) culture -flint/hand axe that measures 14cm long and 5cm wide and is facing down. In Namibia, the Middle Stone Age people were not hand axe makers but produced the so-called ‘prepared technology’ of Levallois cores, flakes, blades and points that resembles this figure. The figure is placed in the middle of the boulder just below a prominent fracture. The figure has been lightly pecked into this darker rock surface with very low visibility from far. The ‘hand axe’ figure has a unique slender shape with a thin, narrow two-sided (or bifacial) shape with concave edges. The figure has been placed in an inaccessible boulder where its surface offers enough room to host many figures, but only this particular figure was placed there. Local San Men did not seem to have an idea about what the figure might represent, but we placed it under the tool category.

h.OEF61/26

Panel Id: OEF61/26
GPS Locations: E15°38 55.94/S21°30 54.27

h.1.Panel Description

Situated on the upper slope of the eastern axis of the site and at the elevation of 1358m above sea level is Panel *OEF61/27*. The panel formed as upper slope wall measuring 2.69m long and 1.2m high. It is oriented at 22°N of the site overlooking almost the entire northern axis including several panels beneath it, as well as the riverbed. From the previous panel, our third panel is accessed through climbing on some sharp stable and some unstable boulders beneath it (Fig. 6.135).

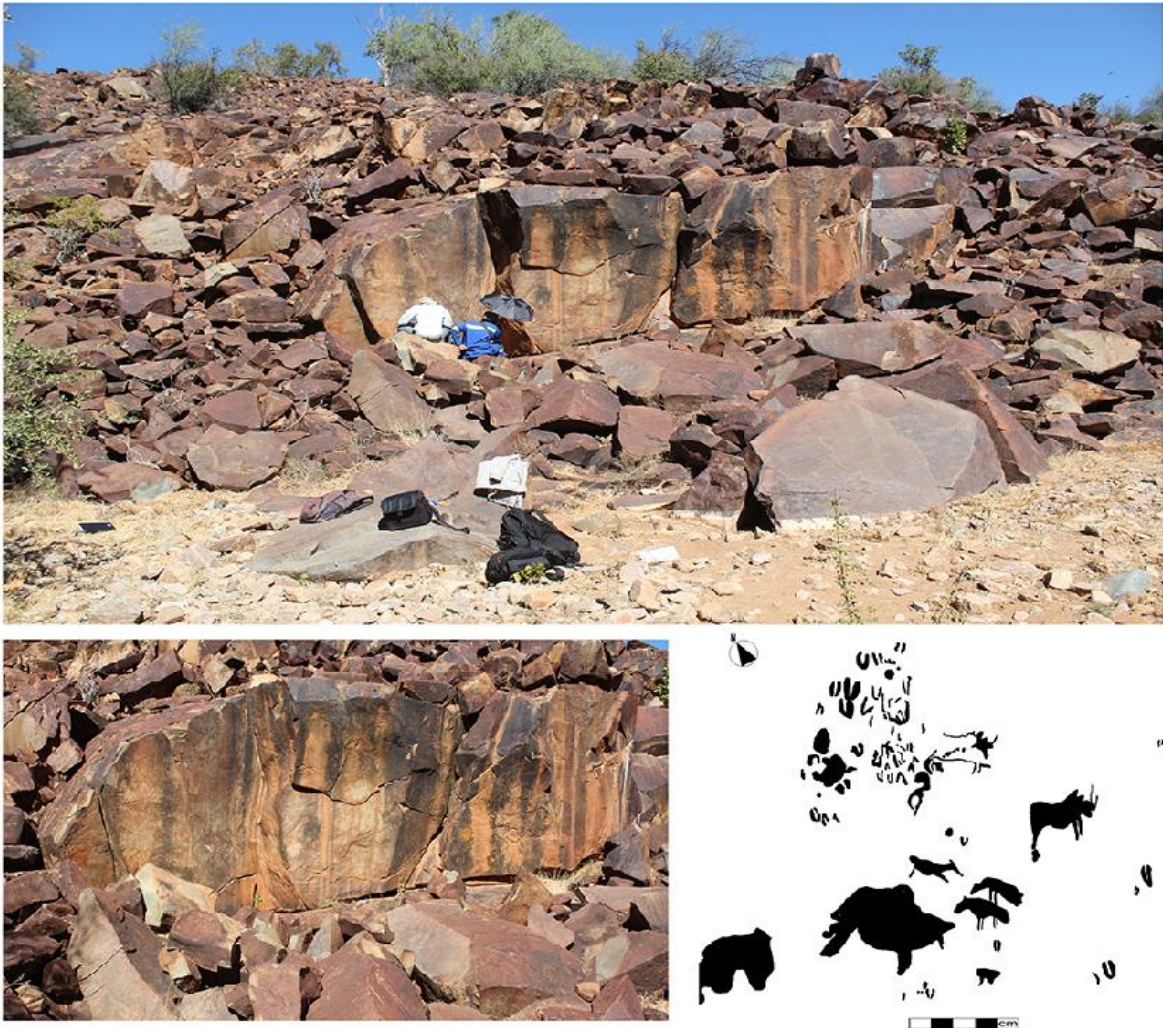


Figure 6.135 Panels OEF61/26. Top and left images shows the location of the panel in the right image shows various engraved animal spoor and figures on the panel.

The panel is one of the top three panels that command great visibility in the entire site but its artwork visibility range from good to extremely poor, even if the panel is relatively large. This is because of the very contrasting colours of the engraved wall (yellowish and dark to brown) in combination with the light pecking techniques, as well as the sizes of the artworks. Almost all artwork on this panel is facing upwards and the artworks occupied the middle and slightly top parts of the engraved surface and are only visible from a 1m range. The panel surface contains many irregularities in the form of some fractures, crevices and some minor depression caused by weathering. Since they produced little to no contrast after being engraved, most of the artworks remain concealed and masked, making it difficult to identify.

Most of them were only visible during rainy season as the surface was wet, which hence produced a little contrast, but during the dry season, when the sun exposure is extreme, it becomes impossible to see the artwork. The light pecking technique used, coupled with the locations of the panel, made it difficult to identify. The panel has also other adjacent panels in its immediate surroundings, which contains mainly animal spoor.

Being one of the mega panels in the site, the panel has in excess of 72 individuals, some outlined pecked and some scratched figures. Among the recorded artwork are 3 human footprints measuring 23cmx11cm, 18cmx7cm and 11cmx6cm in size. Animal spoor on the left of the panel flank one located on top of the boulder individually. This footprint has its frontal only depicted and its five toes intact, the small one on the down right with a narrow sole and slightly broad frontal with five toes and a fully engraved larger right foot on the left with detached toes attached to the end of a small antelope tail. The second and third footprints are located on the far right of the panel among other animal spoor. In addition to human figures, about fifty-six are springbok spoor of various sizes measuring between 12cmx7cm and 5cmx5cm and spread across the panel also form part of the panel content. They have been mainly lightly pecked and those located on the eastern (left) part of the panel have good visibility, while those on the western side have their visibility reduced. Most of these spoor are paired in four, representing at least one springbok but the majorities are not paired and might represent various springboks.

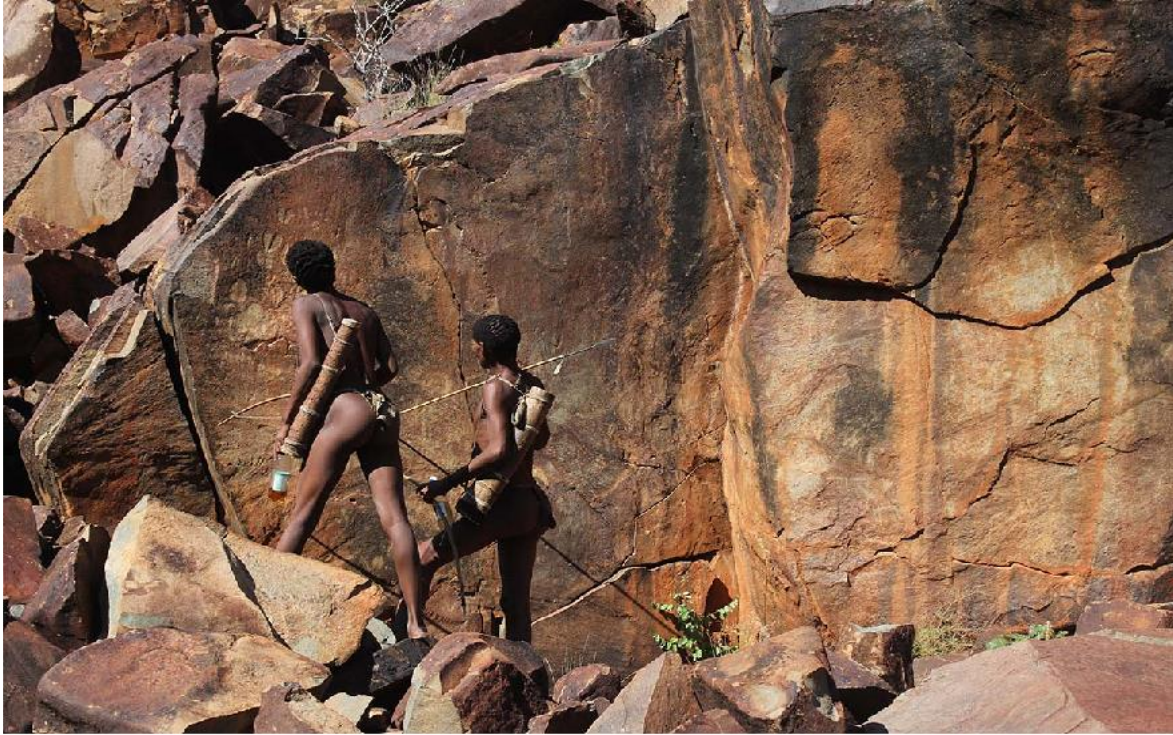


Figure 6.136 Panel OEF61/26. Shows local San men examining and establishing various animal spoors and figures at the panel

Furthermore, other individual spoor (not paired) have also been recorded representing other animal species, i.e., a rhino, one giraffe, one duiker buck, one wildebeest, as well as a total of three animal figures that have been scratched representing two rhinos located on the eastern and western side of the panel, as well as one supposedly elephant figure – which we disputed but the local San men were adamant that it was an elephant (this is because the figure is faded and not clear as other figures). The indeterminate category comprised of six figures most of which have been juxtaposed against other figures across the panel.

i.OEF61/27

Panel Id: OEF61/27

GPS Locations: E15°38 56.28/S21°30 54.46

i.1.Panel Description

The fourth panel at the site containing human representations in a form of footprints is panel *OEF61/27* (Fig. 137). The panel stands at 1356m above sea level and is located on top of the slope of the southern axis of the site overlooking the riverbed. From the previous panel, it is reached through walking over some stable boulders 20 feet east of the previous panel. It's an upright vertical boulder with a height of 2.20m 1.4 width with an excellent visibility of about 15m range from the bottom of the riverbed and it is oriented 0°N or 360°N.



Figure 6.137 Panel OEF61/27. Shows local San men examining and establishing figures at the panel.

There are few fractures running parallel on the panel. The panel is just adjacent to other eastern panels following the formation of the site also with good visibility. Even though it's placed on top of a slope, the panel appear to be very stable. The panel's content registered a total of seven rock-engraving figures occupying the middle and top of the panel that have been pecked. Among those recorded artworks are three complete human footprints, with one located on top of the panel and two in the middle of the panel flanked by a small animal

figure while facing up. The figures have been lightly pecked with their cortex removed and measure 22cmx10cm, 13cmx7cm, 8cmx4 and 19cmx7cm in size (Fig. 138).



Figure 6.138 Panel OEF61/27. Shows the artworks at the panel. Right image shows the traced panel figures.

Two of the footprints are well defined depicting their basic traits (toes and heel), but we could not establish whether they depicted the right or left foot. Their upward orientation gives an impression that such print represents the identity of three persons since their shapes, sizes and even their placement on the panel differ. The larger one is absolutely naturalistic, nearly life size, with equally corresponding numbers of toes and a heel, a clear representation a real human foot. The second foot is equally well defined with a proportionately correct number of toes. Most of its toes with an exception of the baby toe are slightly disconnected from its frontal part. The third smaller toe has been placed beneath a small animal figure and is slightly faded or not artistically well executed or perhaps it is just a conservation challenge. Its size suggests that it could represent a child because even its toes are so tiny while its heel is very narrow. However, we could not establish whether it's a right or left foot, as its inner arch is not defined. Both footprints have been pecked with their cortex removed.

Apart from human representation, the panel's repertoire also contains two animal spoors adjacent to human footprints and the animal figure. One spoor is slightly faded and the other is well defined, and both depict duiker buck spoors. We also recorded one outlined animal figure depicting a duiker buck. In addition to those identified elements, we also recorded one abstract lineal figure measuring 20cmx14cm forming a T-shape form where almost all figures have been placed with an exception of a larger human figure which has been placed on top of the panel. What is peculiar about lineal figure is the fact that its shape touches either the baby toe or great toe, giving the impression that they are connected or walking following such linear shape.

j.OEF61/30

Panel Id: OEF61/30
GPS Locations: E15°38 56.28/S21°30 54.46

j.1.Panel Description

The fifth panel containing human footprints is Panel *OEF61/30*, resting on top of a low-standing vertical boulder located at the extreme foot of the slope and part of it is slightly submerged or just adjacent to the riverbed (Fig. 139). The panel stands at 1334m elevation and measures around 64cm long and 06cm high while oriented at 60°NE and the figures are facing upwards.



Figure 6.139 Panel OEF61/30. Shows the location of the Panel (red arrow) in the site.

From the previous panel, the panel (Panel OEF61/29) is accessed by descending down to the riverbed. It's also easily accessed from the hiking trail that begins from the west towards east where the site abruptly ends. The panel containing the artwork is darkish and displays very little contrast on the engraved part of the panel and it is comprised of very thin fractures cutting the panel in two and, in doing so, separating the depicted human footprints. Nonetheless, the panel inventory accounts for a total of six rock engraving figures facing

upwards, including two human depictions measuring 13cmx19cm and 9cmx7cm respectively that have been outlined in thin peck marks with their cortex intact.

Here, the artist(s) incorporated the natural backdrop of the rock surface to complete the footprint without the need for to fill in. In this case, the footprints are seen interacting not only with natural features in the rock surface, but also with the animal figures on that panel. Furthermore, these depictions although having a complete foot, a well-shaped sole and complete digit/toes, are quite schematic in a sense that the artist(s) only depicted distinguishable marks that were probably deemed relevant.

They are also slightly larger than an actual life-size foot. (6.140). The thin fracture cut the panel in two and, in doing so it separated the depicted human footprints. Such fractures give an impression that they might represent a path, a route or other landscape features such as a track. Such track then leads up to other three to four panels on a steep slope that have been similarly pecked with other anthropomorphic footprints which are standing in a commanding position on both vertical boulders faces. Supplementing human depictions is one duiker buck spoor measuring 9cmx7cm, as well as one indeterminate fully pecked circular abstract figure also located beneath one of the human prints.

This is the first panel where one technique of engraving has been introduced, the outline with its cortex intact. All the human footprints are facing upwards and, once again, flanked by a complete pair of animal spoor, but we could not establish whether the prints are of the right or left foot as they have a peculiar trait in their composition so they look like a hybrid. Moreover, their toes seem of equal size and shape, but both neither feet do have a foot arch.



Figure 6.140 Panel OEF61/30. Shows the engraved artworks at the panel in the original image (left) and traced image (right).

The panel itself, though small and stable, has a one prominent fracture that runs vertically that might cause future concerns. Its location suggest that its might be partially submerged in the water during rain and flood events because it is in a watercourse. However, this has not caused extreme abrasion and loss of rock coating so far and neither has it destabilized the boulder's surface as the panel has a strong stability overall. Of concern at the panel are the shrubs growing near the panel; fortunately, they do not seem to impact the current condition of the panel, but it is future concerns since they are growing towards the direction of the artwork.

k.OEF61/33

Panel Id: OEF61/33
GPS Locations: E15° 38 56.26/S21°30 54.71

k.1.Panel Description

Resting stable on top of a boulder at an elevation of 1339m above sea level is Panel *OEF61/33* (Fig.141). From the previous panel, this panel is located further north and is accessed by climbing on top of other unstable and slippery boulders beneath this engraved panel. It's a very darkish boulder located on the southern axis and oriented 02°N; the panel has the dimensions of 181cm long and .85cm high.



Figure 6.141 Panel OEF61/33. Shows the location of the figure on the panel, as well as the location of the panel in the landscape.

The panel, furthermore, commands an excellent view of the northern axis, but has a low visibility range of about 3m, observable only upon arriving at the panel. Its visibility is restricted as a result of a weak peck and the fact that the engraved figure is not completed, displaying only its frontal face and by the fact that the figure is quite small in size (Fig. 6.142). The engraved surface, however, reveals a lighter surface beneath which helps us to identify the figure from a 3m distance. The panel contains a single individual anthropomorphic frontal foot facing upwards without its heel; it appears to be an adult right foot measuring 1cmx12cm. The depicted forefoot has the complete five toes but it's intriguing because of its dissimilarity to other human footprints in the site, as it also resembles

a feline-like design. Its morphology also puzzled the local San men who have a vast knowledge of tracks of both animal and human prints.



Figure 6.142 Panel OEF61/33. Shows the lightly pecked figure on the panel at 10cm scale.

The San men were of the opinion that the figure is complete and its placement in its location is deliberate. The figure is shallow pecked. The primary concerns at the panel include fissures and continuous exfoliation that might have led to the loss of some surface rock coating, which hopefully will not compromise the stability of the boulder.

1.OEF61/34

Panel Id: OEF61/34
GPS Locations: E15 38 56.33/S21 30 54.69

1.1.Panel Description

The seventh panel containing human representations is our current panel, Panel OEF61/34, standing at a 1335m elevation and oriented at 352°N and with a dimension of 1.8m long and 0.5m high (Fig.6.143). From the previous panel, climbing upwards from the previous panel over some sharp and unstable boulders accesses this panel. The panel provides an excellent view of the northern axis; since the engraved part of the surface has a high contrast, the artwork's visibility varies from 8 to 10m from the bottom of the riverbed.



Figure 6.143 Panel OEF61/34. Shows the location of the Panel (red arrow) in the site.

The artworks at this panel were executed into two pecking techniques that are light and deep pecking with their cortex removed. The panel's inventory consists of four engraved figures and of two fully engraved human footprints measuring between 18cmx10 cm and 9cmx6cm and which are adjacent to each without contact and which are located in the middle of the panel and are facing upwards. The larger human print has been deeply pecked; its visibility is quite high as opposed to the adjacent one on the left. Both footprints have been firstly

outlined and then pecked (in-filled) with small peck marks inside their cortex, while the giraffe head is scratched and facing the west side of the site entrance.

The larger print is six toed and appears to be a left foot because the foot arch is slightly bent inside, while the small footprint has four toes with a small heel; yet it is not easy to decipher its anatomy. We questioned the local San men about the possible reasons why some of these footprints have either missing or extra digits, but they seem to have conflicted views. In addition to human footprints, the panel also contains one slightly faded animal figure identified as an outlined giraffe, showing only its headline outline and its elaborated neck, measuring 19cmx8cm and located to the right of the panel, roughly 25cm from human footprints. Unlike the fractures that are normally seen above, beneath or even in the middle of the panel's flanking figures, the fracture on this panel is located further right of the panel away from the figures (Fig. 6.144). There is also one indeterminate pecked figure, also located beneath one of the human prints. There are about three associate panels found in the immediate surroundings of this panel but they contain animal spoors. Although the panel is still stable, strong wind events could pose an immediate threat to the panel and its content.



Figure 6.144 Panel OEF61/34. Shows the artworks on the panel at 10cm scale.

m.OEF61/36

Panel Id: OEF61/36
GPS Locations: E15 38 54.61/S21 30 54.09

m.1.Panel Description

The final panel with human footprints at is Panel *OEF61/36*. The panel has the dimensions of 90cm long and 69cm high and is located about 50m on a steeply upslope of the site across the northeastern side of the riverbed and is oriented at 301°NW and stands at an elevation of 1359m above sea level (Fig.145). Accessibility to this panel requires a careful climbing through unstable rubble of boulders up on the northwestern side of the site. It's a darkish panel producing high contrasts of its engraved surface and its artworks are visible from 10m below the riverbed.



Figure 6.145 Shows the location of the Panel OEF61/36. (red arrow) in the site at a top of the northern slope.

The panel is placed in isolation with no adjacent engraved panels in its vicinity other than the previous panel (Panel OEF61/35) at the bottom of the northern axis found 15m away. Furthermore, since the panel is sloping upright, this makes it susceptible to planar weathering with surface irregularities already noted on the panel, but, overall, the panel is stable. The artwork on the panel has been placed at the right bottom and slightly upper area. Two of the prints (probably adults) have been deeply pecked with their cortex removed, while two out of

three smaller prints have been lightly pecked and slightly in filled with less dense pecked marks. The last smaller one attached to one of the adult print is simply outlined in smaller and thin pecked marks with its cortex intact.

The panel contains five distinct anthropomorphic footprints, consisting of two smaller ones slightly placed at the bottom right of the panel, measuring 12cmx8cm and 10cmx9cm and which appear to represent two different individuals since the right foot is depicted. The first footprint is five toed while the smaller one has only four digits slightly detached from its fore foot. They are both oriented upwards, giving the impression that they are emerging from beneath the panel and walking following the larger footprints ahead of them. Three of the footprints have been placed slightly above the smaller prints and have the dimension of 25cmx19cm, 13cmx8cm and 18cm 9cm in sizes respectively (Fig.146).

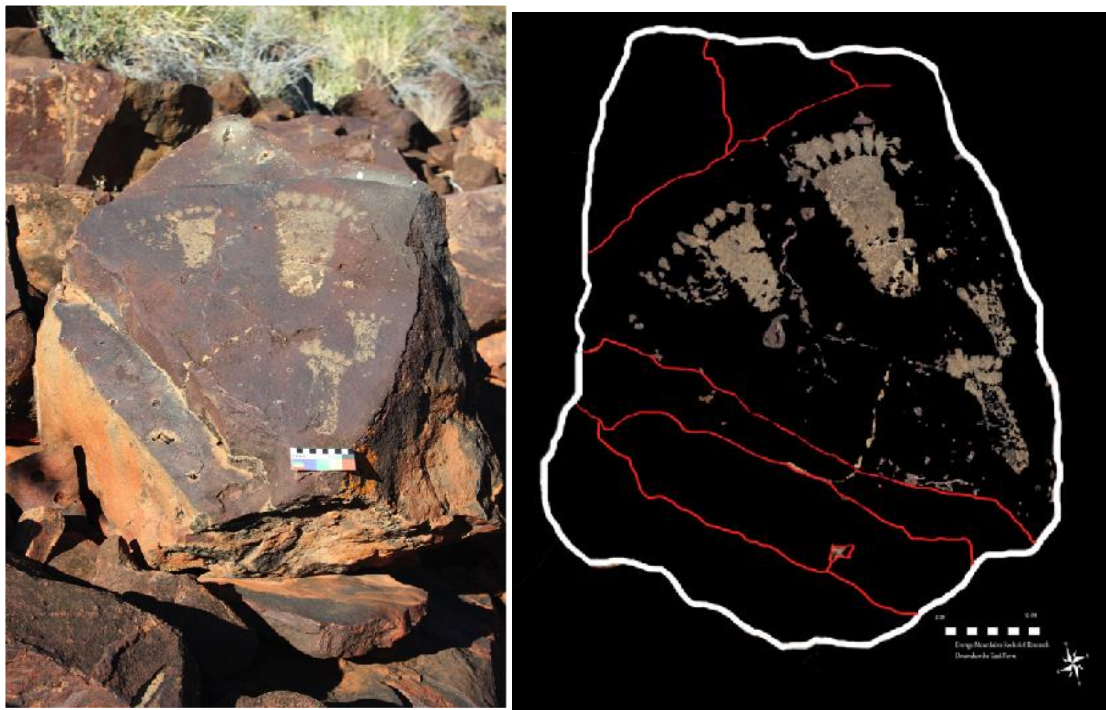


Figure 6.146 Panel OEF61/36. Shows the varied human footprints on the panel. Left, is the original image while right image shows the tracing of the panel.

The larger print on the top right has seven digits, while the medium print is six toed and the smaller foot (not proportional to human footprints), attached to the medium print on the top right, contains four toes. Both prints seem to belong to different individuals because they represent a right foot and have different shapes. It is possible that they represent two adults and three children. Four of these prints seem to be naturalistic drawn but once again, we could not establish possible reasons for extra and missing digits on some feet. We have also

observed that the artists did not utilize the entire panel since there is space especially left of the panel where the other prints could have been placed. It is like to be an intentional act rather than a random one.

The footprint top left attached to the medium one is quite abnormal, as its morphology also resembles a baboon handprint. During the recording and documentation campaign, we were able to photograph the panel in 3D. The engravings at this panel are in a very good condition thanks to a stable boulder and the protected location. Overall, the panel is very stable but susceptible to planar weathering (water run offs, wind erosion and the intense glare of the sun) since it's an upright panel.

n.OEF61/48

Panel Id: OEF61/48
GPS Locations: E15°38 55.85/S21°30 54.17

n.1.Panel Description

Panel *OEF61/48* is the last panel located on the northern axis of the site (Fig.147). It's found 4 meters from the previous panel and stands at 1355m elevation. The panel consists of only one animal figure – what appear to be a rhino, measuring 24cm high 55cm long and faces 0°N. The engraving figure on this panel is restricted to the lower right of the panel facing a large fracture to its right. The figure has been engraved through a scratching technique with its cortex removed. The animal was drawn in a lateral perspective with its well-defined curved backline and stomach line. Both hind and frontal legs are clearly shown, in addition to its well-detailed tail. The animal's frontal morphology is not well defined but its overall morphology can be seen.

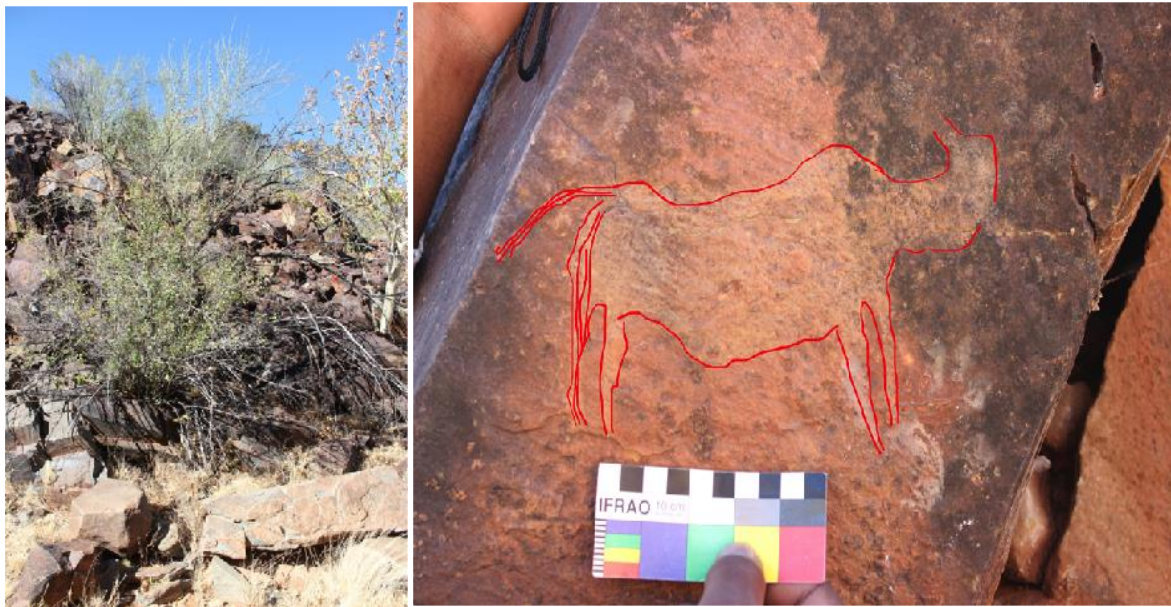


Figure 6.147 Panel OEF61/48. Left image shows the location of the panel (red arrow) while the right image show the engraved figure at the panel.

The orange to yellowish part of the boulder produces very little visual contrast, thus the artwork is barely detectable and only visible from a close range. We could not distinguish its gender or whether the engraved rhino figure was a black or white rhino, as the determining features are not well defined in the figure. However, we suspect that it could be a white rhino as it have has a pronounced hump on the back and neck and a hooked lip as opposed to a flat-based lip of the black rhino, this according to the identification by the San people.

Furthermore, the rhino is 13cm long from tusk to tail and 11cm long from its shoulders to the legs, but its toes are not shown. Overall, the figure is in a very good condition, but there is large fracture in front of the figure, which is an indication of future break off. The panel appears to be stable but the pressure from other boulder behind it might cause future concern.

o.OEF61/49

Panel Id: OEF61/49
GPS Locations: E15°39 1.96/S21° 30 54.9

o.1.Panel Description

Found entirely in the middle of the riverbed is Panel *OEF61/49* (Fig.148), located in a ravine inclined about 120°E, facing north the panel and standing at 1338m above sea level. It is located just near Panel OEF61/22 and OEF61/23 and was discovered during the final field campaign. Although the panel commands great visibility in the site, its artwork can easily be missed because the panel's surface is very dark; producing no contrast, while the engraved figures, although deeply pecked is correspondingly, darker.



Figure 6.148 Panel OEF61/49. Left image shows the location of the panel (red arrow) in the site.

The panel has approximately 18 animal spoors, depicting twelve antelope spoors, identified as one klipspringer (measuring 4cmx5cm), about eleven springbok spoors (measuring between 10cmx 8cm and 8cmx6cm), four zebra spoors (measuring 5cmx4cm and 4cmx3cm) and two rhino spoor (measuring 10cmx9cm). The artwork on this panel is restricted to the northern side of the panel and the paintings have all been deeply pecked. There can be no doubt that it become completely submerged in the water during the rainy season (Fig.149), fortunately a short period compared to the dry season. However, we were not sure whether the panel is

located on its original location or if it might have fallen from the upper slope/ridgeline coming to rest in the streambed. We have also observed that the panel was highly likely walked over by hikers as the hiking trail runs through the ravine where the panel has lain down since the boulder's shiny darkish surface color coupled with the light pecking techniques of engraving makes it very difficult for people to see the artwork and, lastly, the fact that the soil erosion emanating from the movement of debris and other objects over the surface during rain and flood could potentially lead to the burying the panel as part of the panel is partially buried with sand and debris. Unguided visitors have the potential to harm the artworks since the hiking trail passes through the panel.



Figure 6.149 Panel OEF61/49. Top left images showing the location of the figures on the panel, while bottom left image shows the traced panel.

p.OEF61/50

Panel Id: OEF61/50
GPS Locations: E15 39 1.06/S21 30 55.85

p.1.Panel Description

This panel is located about 8m from the spring at the bottom of the northern slope overlooking the immediate open space and the southern axis of the site (Fig.150). It is easily accessible by a short 10-metre walk from the previous panel. It measures 64cm long and 34cm high and faces 182°S. The panel stands at 1342m above sea level. The panel can easily be missed by an untrained eye because its surface is very dark, while the engraved figure is equally dark. Therefore, this, in combination with the shade from the vegetation behind it, as well as other large boulders, made it even more difficult to find.



Figure 6.150 Panel OEF61/50. Left image shows the location of the panel (red arrow).

The artwork placed on the top left has poor visibility range because it's darker while the engraved surface produced no contrast. Overall, the boulder appears to be stable. However, its location at the bottom of the southern slope means that it is susceptible to water erosion in the event of a flood. The panel has only one engraved animal figure, which is likely to be a depiction of rhino which measures 22cmx9cm and which is depicted facing the direction of

the spring below the panel (Fig.151). The figure has been deeply pecked and was well executed.



Figure 6.151 Panel OEF61/50. Left image shows original image on the panel, while the right one is a traced image of the figure at the panel.



Landscape of Omandumba East engraving site, view from upper northern slope. Image credits:
Harald Rust

6.2.5.Part C: Spatial Analyses of Landscape Attributes

The following spatial analysis examines the landscape variables of the rock-engraving site. The analysis comprises of seven landscape variables, namely (1) panels' placement and their geomorphological formations, (2) elevation, (3) proximity to springs, (4) accessibility, (5) aspect/orientation, (6) visibility of the engraved panels in the landscape and (7) the positioning of rock engraved figures onto rock surfaces.

a. Panel Placement

The engraved figures at site OEF61 have been executed on various basaltic boulders most of which have been shaped by a wide range of actions, including erosion, resulting in different morphologies, sizes, shapes, topography and orientation, found at various locations in the site. The engraved basalt panels are distributed along two main axes (north and south) that cover an area of approximately 1km (Fig. 6.152).

Map Legend

-  Permanent Water Points / Springs
-  Engraved Boulders / Panels
-  Path / Rivercourse
-  Small Bridge
-  Basalt Boulders
-  Commiphora Saxicola Arbuste
-  Acacia Tree

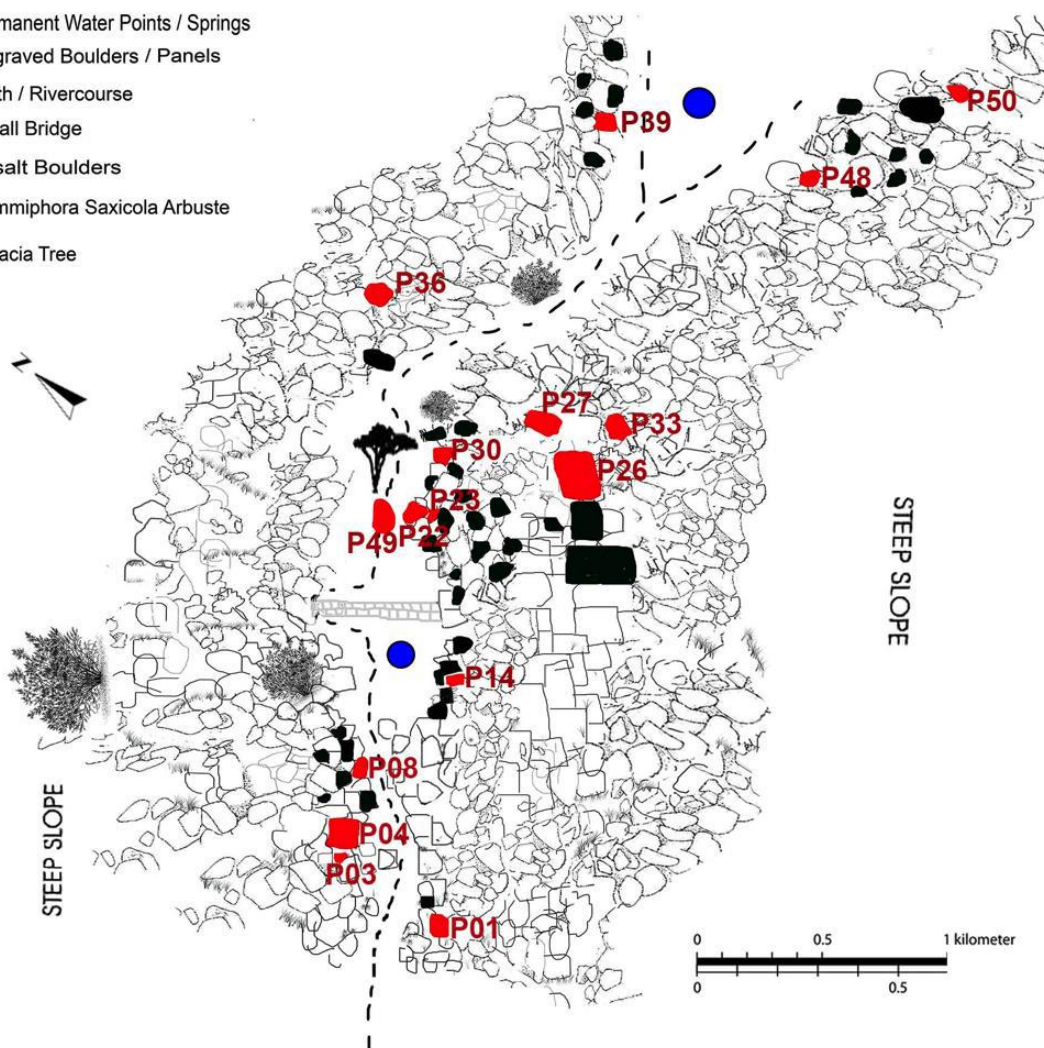


Figure 6.152 Shows the spatial distribution of the engraved panels in the site. Illustration by author.

The following table (Table 6.15) provides an overview of the locational settings in which rock engravings were found in the study area. Here, the total numbers of panels per three identified locations are quantified.

Location of the Panel	No. Of Panels	% of Panels
Middle Slope	4	8%
Bottom Slope	45	90%
River Course	1	2%

Table 6.15 Indicates the locations of the panels in Site OEF61.

The table above indicates that the engraved boulders are found primarily at three different locations in the site. The majority of the panels are those found in the bottom slope of the site, accounting for 90%. Engraved boulders under this category are widely distributed along both axes of the site and their placement in the landscape varies from an isolated pairs of panels to large clusters of panels comprising of seven to twenty panels. Moreover, the sheer numbers and diversity of these engraved surfaces ranges from horizontal dimensions (flat/planar) surfaces to upright surfaces sloping upwards

About eight of these panels in this category, i.e., OEF61/01, OEF61/04, OEF61/20, OEF61/22, OEF61/23, OEF61/30, OEF61/31 and OEF61/38, are placed at the extreme bottom of the slope, therefore, becoming partially submerged in the river as evidence of water stains on these panels have shown, but the majority, although at the bottom of the slope, are not found in the river course. Engraved boulders found in the middle of the site are the second most represented, accounting for four panels representing 8%. Three of the panels under this category, i.e., OEF61/27/ OEF61/33, OEF61/34, have upright surfaces sloping upwards and are found in the same cluster, while panel OEF61/26 is a large vertical panel comprising of three clusters of split boulders. Lastly, about 2% representing one panel have been recorded in the river course, Panel OEF61/49. The panel under this category is completely in the middle of the river course and becomes submerged during the rainy season (Fig. 6.153 left)



Figure 6.153 Shows the location of the engraved panels in the site. Image to the left shows the mid slope (walls) and bottom slope (red arrow), while right image shows the location of Panel OEF61/49 in the river course.

The geomorphological setting of the engraved panels/boulders varies within the site as discussed earlier. Most common shapes of the engraved boulders range from rounded, square, triangle, rectangle, and diamond-shaped boulders to oval, columnar and perpendicular shaped boulders (Fig. 6.154). More often, the physical morphology (shape) and size of the panels do not determine the quantity of the figures, i.e., there are instances where largely shaped and sized surfaces contained few artwork, just as there are small shaped and sized panels with many figures which suggests that the panels were chosen deliberately, i.e., just as the artist (s) chose what to depict and what not to and how many to place on each surface. In many cases, the figures on the engraved surfaces are only restricted to a certain part of the panel while very few occupy the entire panel.

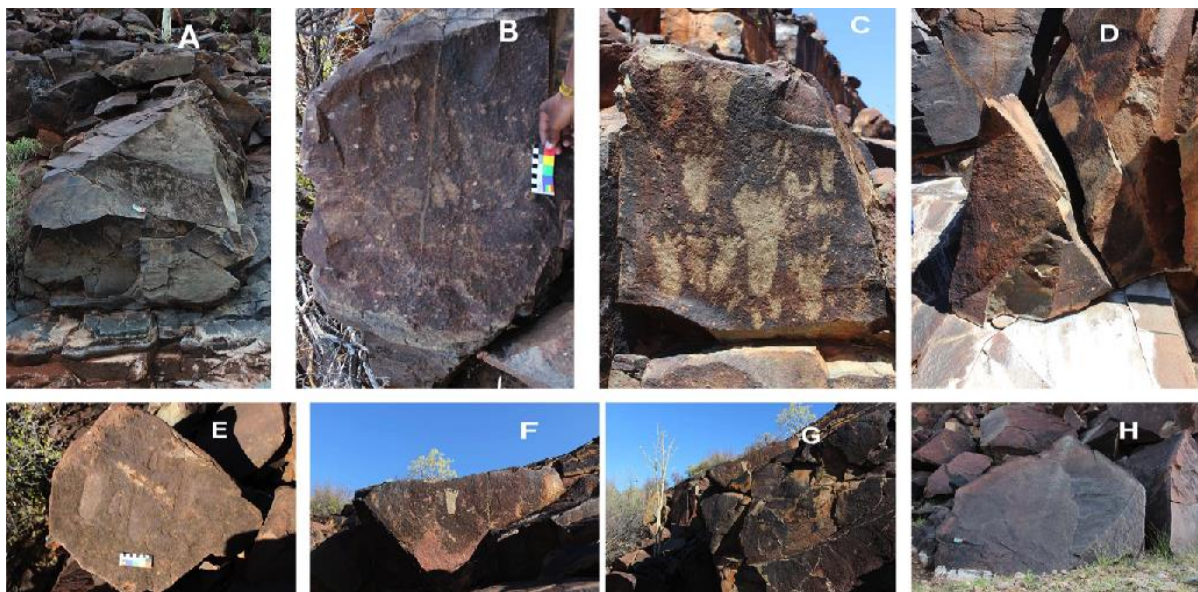


Figure 6.154 various shapes of engraved boulders. (A) Diamond-shaped boulder loping backwards, Panel OEF61/06. (B), Parallelogram-shaped boulder, Panel OEF61/30. (C) Square-shaped boulder resting on top of another boulder, Panel oef61/14. (D) A detached hexagon-shaped boulder standing vertically, Panel OEF61/10CLB. (E) A slightly round-shaped boulder, Panel OEF61/35. (F) A rectangular boulder lying horizontally, Panel OEF61/34. (G), A columnar jointing and perpendicular fracturing on the outcrop face, Panel OEF61/33, while (H) is an slightly rounded shaped boulder partially submerged in the river course, Panel OEF61/22.

b.Panels Elevation

The topography of the engraved panels was another important landscape attribute taken into consideration for analysis. This was crucial because the topography of the panels is one of the key elements influencing not only the visibility rate of the panels but also the accessibility of the artwork to their locations. It is possible that the topographical reference could have been one of the motivating factors for the selection of surfaces due to their elevations in the wider landscape. All the engraved panels in the site occur between 1323m – 1340m above sea level.

The elevation analysis used 5m ranges and divided it into three categories as reflected in (Table 6.16 & Fig. 6.155).

No. Of Panels (n=50)	Elevation (m)	% of Panels	No. Of. Figures (n=458)	% of Figures
4	1323 – 1328	8%	69	15%
26	1329 – 1334	52%	308	67%
20	1335 – 1340	40%	81	18%

Table 6.16 Summary of the range of panel elevations of Site OEF61

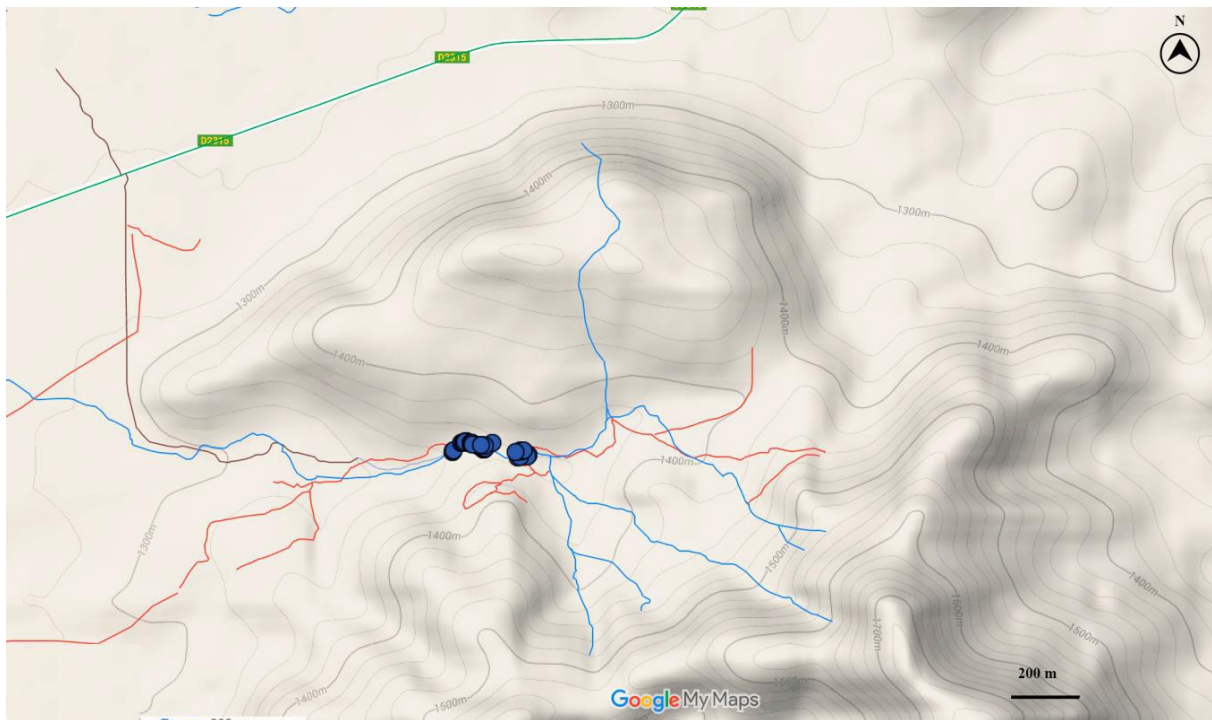


Figure 6.155 Base Map indicating the topography of the Panels recorded at three elevations for Site OEF61 © Google Maps

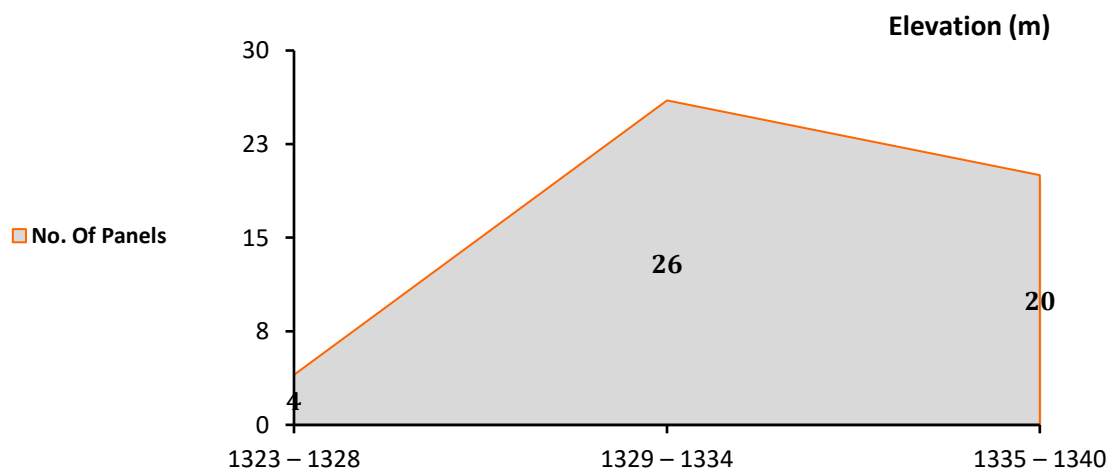


Figure 6.156 Topography analysis of engraved Panels at Site OWF61 in Omandumba East Farm.

Data obtained from the elevations analysis above indicates that only four panels, representing 8% of the total panels, occurs between elevation ranges of 1323 – 1328m above sea level. Panels found in these topographical ranges are the first panels, i.e., OEF61/01 and OEF61/02 located on the southern slope while OEF61/03 and OEF61/04 are found on the northern slope. These panels are some of the most susceptible to erosion, especially in the event of flood, as evidence of water stains are visible from the lowest sections of the panels. All these panels contain only animal spoor and both animal figures (Panel OEF61/03). However, they are physically stable as they rest on the ground, with the exception of Panel OEF61/04, which rests on top of another boulder. The panels also serve as entry panels of the site. Panels under this category comprised of 69 artworks.

These were followed by the second category, containing 26 panels occurring between 1329 – 1334m elevation representing 56%. The bulk of these panels contain a total of 308 artworks representing 67%. Among the panel's artworks predominate animal spoor and few animal figures, as well as all the eight (8) panels contains human figures with the exception of the ninth panel (OEF61/61), which falls under the elevation of the next category range. Only seven (7) of these panels are located on the northern slope (OEF61/05-OEF61/11), while the rest of the panels are found on the southern slope.

The last category comprised of 20 panels containing 18% of the artworks found between 1335 – 1340m elevation. The majority of the artwork in this category comprised of animal spoor and figures, as well as one panel containing human figures (OEF61/36). Most of the panels are located towards the end of the site exit and occupy both the northern and southern axes. This range of results suggests that cultural factors had a large impact in determining the elevations for the panels. Geomorphologically, the availability of boulders at the same elevations could be another factor, since many unengraved boulders were found all over the site. As a matter of fact, the majority of the boulders in the site are those without artwork.

c. Proximity to permanent water sources: springs

All the engraved panels are found in the riverbed and are confined to 400m areas out of 700m of the total outcrop. And therefore, all the panels are in proximity the river course that flanks the site (Fig. 6.157). However, not all the panels in the site are in the immediate proximity to the permanent water points, the two springs. The analysis of the proximity to water sources,

therefore, assessed the general distribution of engraved panels and their juxtaposition to the two springs in the site.

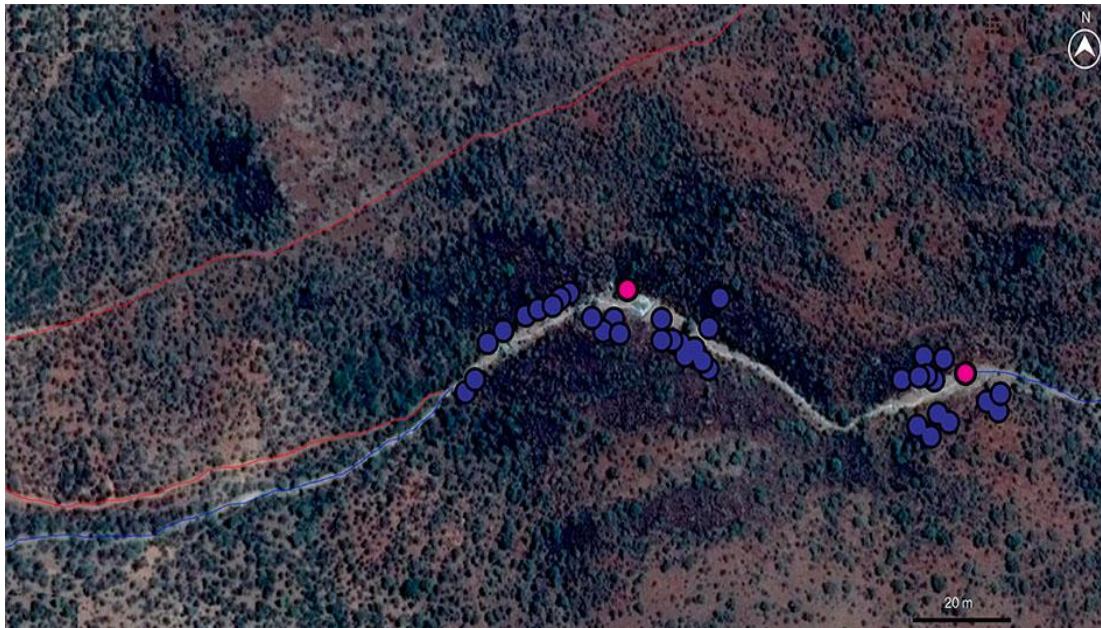


Figure 6.157 Shows the proximity of engraved panels (in blue) to Springs indicated in pink at site. © Google Earth.

For this, calculations were made of the distance in meters from each panel to the springs using a 50-metres measuring tape from two points (the panel and springs) on the ground and Google Earth maps. To achieve this, the distance calculations are given in 100 meters intervals, thus subdivided into four categories (Table 6.17).

Proximity Variables (m)	No. Of Panels (n=50)	% of Panels
Spring (near site entry)		
0-100	25	50%
101-200	4	8%
201-300	3	6%
301-400	18	36%
Spring (near site exit)		
0-100	18	36%
101-200	12	24%
201-300	4	8%
301-400	16	32%

Table 6.17 Proximity analysis of rock engraving panels in Site OEF61 to water sources (springs) in the site.

The proximity analysis of the panels to the two bodies of permanent water points, the springs, indicate that all the engraved panels 50 in the site are confined to 400m of both springs. (Table 6.17) details the results for the sites in relation to the two springs in the site. The analysis indicates that about 25 panels representing 50% panels within the site are 100m in proximity to the first spring located near the site entry (see Fig. 6.158 & Fig. 6.159). These comprised of last two panels. Among them are for instance, Panel (OEF61/10 OEF61/11, OEF61/ 12, OEF61/13, OEF61/ 14 and OEF61/15) located on both northern and southern axis of the site. Among all these panels, only one panel (OEF61/14) contains human footprints, while the rest of the panels contain various animal spoor.

The sites were followed by the massive decline of panels from 200m from the spring (near the site entry) of the site, accounting for 4 panels, representing 8%. Further declines of 3 (6%) panels were further recorded at a distance of 300m from the spring. The second majority of the panels 18 (36%) in the site are found at 400 meters from the spring (near the site entry). The panels are those found from the middle of the sites towards the site exit point as shown in (Fig. 6.158).

Furthermore, about 18 (36%) have also been found 100m in proximity to the spring near the site exit (see Fig. 6.157 & Fig. 6.158). These panels were followed by a slight decline of panels 12 (24%) panels found in a 200m distances of the same spring. However, another sharp reduction of panels, 4 (8%) were those confined to 300m from the second spring. These are the same panels that were recorded at 200-300m from the first spring. The second most dominant panels are those recorded between 300 and 400m distance ranges from the second spring. The majority of the panels are those that were initially recorded between 100 – 200m from the first spring. Generally, the data indicates that all these engraved panels closer to the springs in the site, although variations in distance ranges exist among the panels.



Figure 6.158 Show a cluster of panels (OEF61/ 12, OEF61/ 13, OEF61/ 14 and OEF61/ 15) in proximity to the spring near the entry of Site OEF61. Below the panels is the reliable spring that retains water throughout the year.



Figure 6.159 Shows a cluster of panels (OEF61/ 12, OEF61/ 13, OEF61/ 14 and OEF61/ 15 as indicated in in red) in proximity to the spring near the site exit.

d. Proximity to Animal Trails

Another landscape variable that was investigated in this study was the current animal trail system in proximity to the engraving site. Such investigation was of utmost importance in order to establish the association/connections (if any) between the game trails or animal

migration with the engraved animal figures and spoors depictions at the site, this given the fact that the site is located in the riverbed where two reliable permanent water points, the spring. The likelihood of such trails system were used by prehistoric people for their mobility in order to have access to resources (food and water) is high given the limited and restricted water sources in this locality, particularly in the dry season. The site area, I discerned that the current trails system has limited routes possibly as results of the rugged terrains and limited water sources. The trails system follows the river system (Fig. 6.160) to the site, from the site entry to the site's exit point.

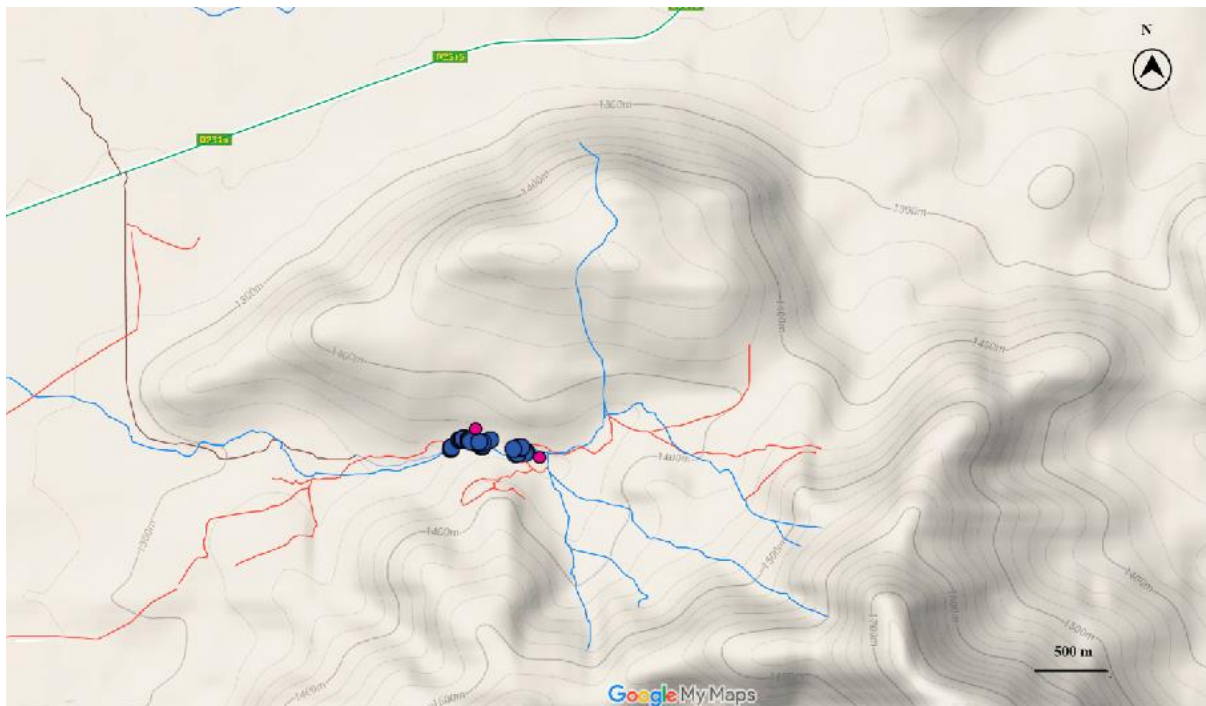


Figure 6.160 Current trails system (in red lines) around the engraving site in the Omandumba East Farm. Blue circle represent the position of the engraved panels while the pink indicates the locations of two springs. ©Google Maps

The trails analysis indicates that the animals either entered or exited from both sides of the site as three trails have been recorded on both sides as reflected in (Fig. 6.161). Upon inspecting the animal spoors in the trails and water points (springs), we observed, with the assistance of the San people, that the fresh spoors are very similar to the engraved spoors in the site (Fig. 6.162). It is, therefore, likely that the entire engraved animal spoors and figures in the site reflect a localized compendium of fauna that are still found in this environment today. The absence of other surface archaeological materials, as well as the geomorphological setting of the sites, therefore, suggest that the site was not a habitation site, but functioned as a hunting locale just as the ethno-historic evidence from the local San men maintained.



Figure 6.161 Left: The local San men Mr. Kxao /Lukxao, and Mr. N!ani R!kxao walking in the game trail towards the site. Right, Mr. N!ani R!kxao following fresh animal spoor in the site from the site exit towards the site entry.

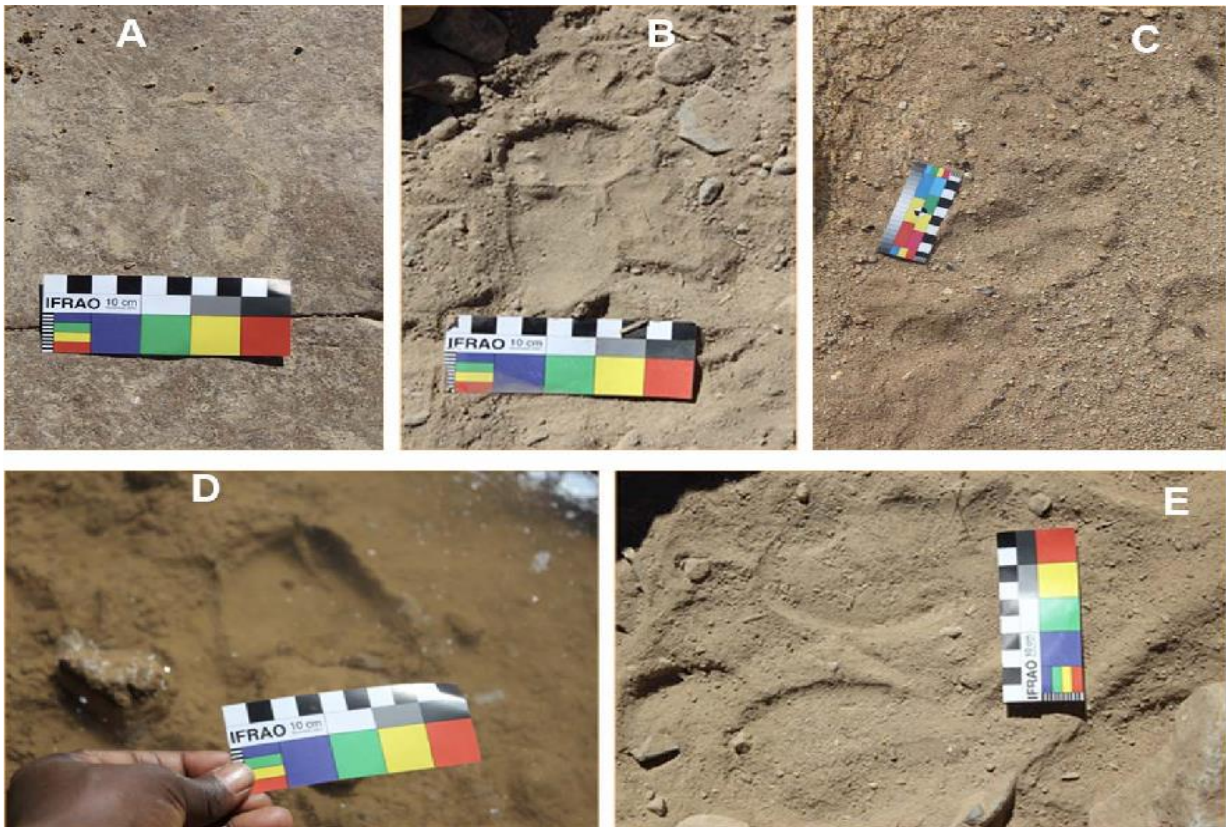


Figure 6.162 Shows various fresh animal spoor in and around the site trail systems. (A) Oryx spoor tracks at the spring (near site exit point). (B) Bushbuck spoor tracks in one of the trails. (C) a fresh Kudu spoor tracks in the spring (near site entry point). (D) The zebra spoor tracks at the spring (near site exit point). (E) Another view of spoor tracks in a trail.

e. Accessibility of the engraved panels in the site

The fifth landscape variable investigated in the study was the accessibility of engraved panels in the site. This was a critical enquiry in order to understand and establish the physical exertion needed to reach the engraved panels and the extent to which the artworks are hidden

away from open view based account of their location, boulder surface colours and accessibility in the landscape, this so that we will be able to understand how the site was organized, perceived and accessed by the artists in light of their extensive distributions. Following Paul Bahn (BAHN 2006), classification of public and private art is used to determine the accessibility of the sites/panels, I have, therefore, categorized the panels according to the locations they occupy in the landscape on the basis of those: accessible (1) and those with restricted access (2) as demonstrated in (Fig 6.163). The accessible panels are those perceived to be easily reachable and viewable to everyone, while panels with restricted access are those perceived to have private viewing.

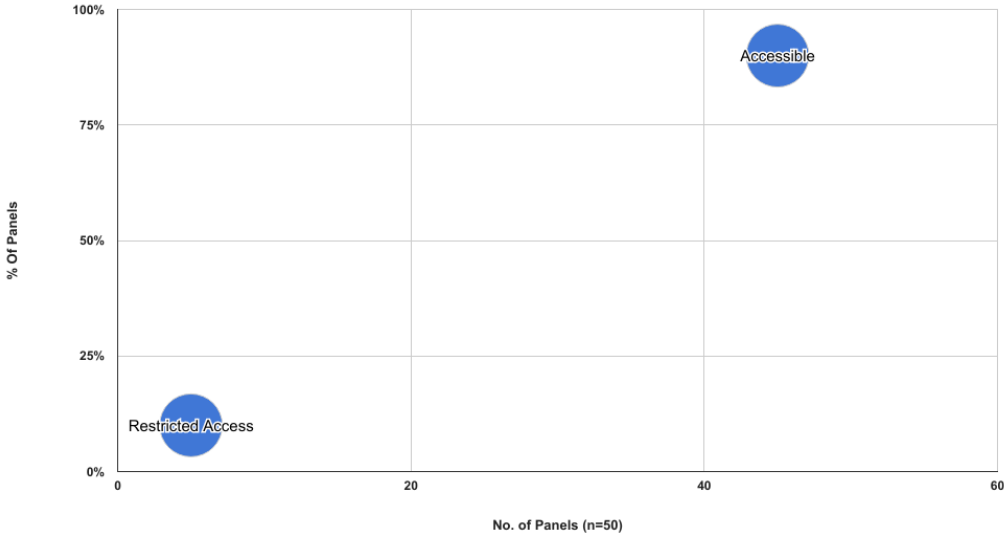


Figure 6.163 Shows a scatter chart indicating the total number of panels that are accessible and those with restricted access in the site.

The accessibility analysis indicated that about 45 panels, representing 90% of the panels within the site, are generally accessible. These panels are found at various locations within the site such as at the foot/bottom of the slopes and in the river course, as shown in (Fig. 6.164). Accessing these sites requires less effort; nevertheless, cautions are required since most of the boulders appear unstable with sharp edges.

Panels with restricted access account for five (5) in the site, representing 10% of the panels. These includes a cluster of panels such as OEF61/33, OEF61/34, OEF61/35, OEF61/36, OEF61/37 found located in the middle of the slopes and where we had to climb up to the upper slope in order to reach the panels. The nature of the access to these panels would, however, permit only few people to access them, as the reaching them can be dangerous as

the boulders have sharp edges, are slippery and unstable. Besides that, the spaces in between the boulders are also sometimes small and sometimes the nature of the jagged rocks interrupts the process of reaching them.



Figure 6.164 Top left and right images shows the local San men Mr. Kxao /Lukxao, and Mr. N!ani R!kxao trying to reach some of the panels with restricted access. Bottom image show my colleague, Mrs. Fousy Shinana trying to access one Panel OEF61/36.

With regards to viewing the panels, we observed that both accessible and restricted panels have different degrees of visibility. This is attributed to a number of key factors, including the visibility rate of the figures, orientations of the panels in the landscape, the size of the artworks on the panel (and to some extent even the number of artworks on the panel), the technique of productions, as well as the surface colour of the engraved boulders. These factors are explored further in the landscape analysis, that is, how they are likely to be some of the

influencing dynamics in the placements of the artworks at various locations. There are many instances whereby a panel is highly accessible but its artworks can easily be missed as a result of factors mentioned above (see Fig. 6.165 & 6.166).



Figure 6.165 The left image indicates the accessible location of Panel OEF61/03 (red arrow) from the bottom of the slope, while the right image shows the artwork on the same panel that has restricted viewing due to the darker natural color of the panel producing no contrast, reducing its visibility.



Figure 6.166 The left image indicates the location of Panel OEF61/34 with restricted access on top of southern slope, while the right image shows the artwork on the same panel with high visibility and viable ratio due to the fact that the engraved surface produces contrast, the orientation of the panel allows it to be viewed from the bottom of the slope and the size of the artwork on the panel is large enough to be viewed.

f.Aspects/Orientations

The spatial orientation analysis of the engraved panels in the site was another important landscape variable used to broaden our knowledge of the spatial distribution and placement of the artwork on specific locations in this open-air site. The cardinal orientations of the panels influence not only the visibility (angle from which the audience can observe artworks) in the landscape, but also the mobility/accessibility to the panels. The engraved panels are oriented at various directions. This range of results suggests that both cultural and the geomorphological aspects were likely among the influencing dynamics in determining the

choice of panels. Panel orientations were taken looking generally at the angle of inclination of the panels in the site. For this, the analysis comprised of four groups: A from 0° to 90° (north), B from 90° to 180° (east), C from 180° to 270° (south) and D from 270° to 360° (west) as reflected in (Table 6.18 & Fig. 6.167) below.

Group	Number of Panels	Orientation	% of Panels
A	16	0° - 90°	32%
B	25	90° - 180°	50%
C	4	180° - 270°	8%
D	5	270° - 360°	10%

Table 6.18 Summary of the panel's orientation at Site OEF61

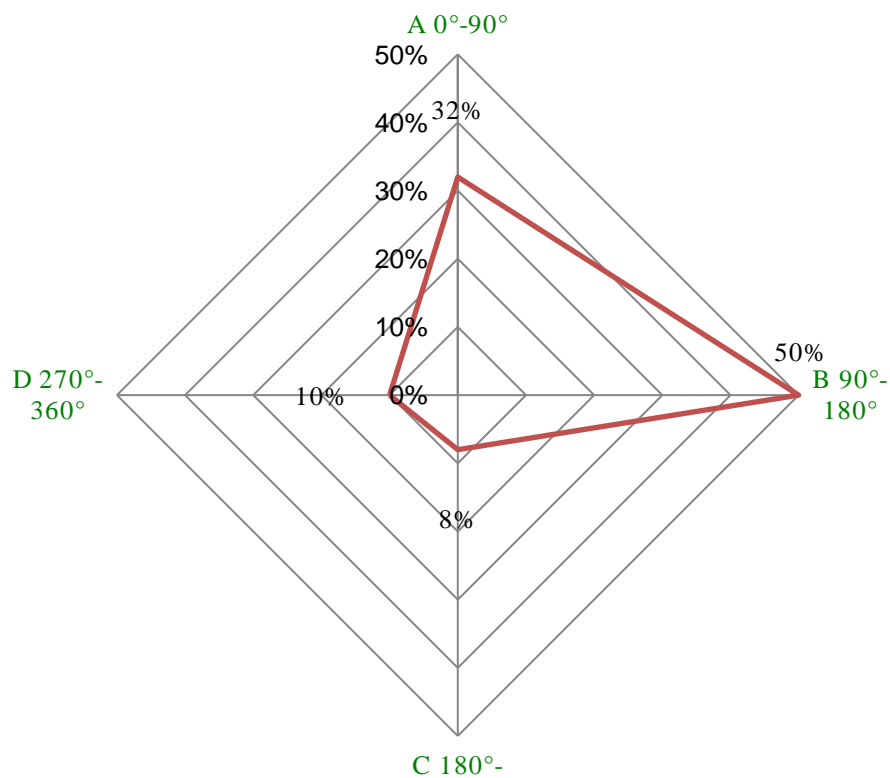


Figure 6.167 Presents the orientations engraved panels at Site OEF61.

A similar pattern of orientation analysed in the painting repertoire have also been observed among the engraved panels. Like in the paintings sites, the orientation pattern among the engraved panels also suggests engraved panels under Group B are predominant, accounting for 50% of the total corpus are oriented easterly. Most of the panels under this group are those found on the southern slope, either from the upper and lower slope. They general explanations

offered to the painting sites can also be replicated here since the engraved panels share similar characteristics. However, differences have been noted among the engravings oriented this direction. For instance, the artworks depicted at these panels are in good state of conservation, owing to the engraving techniques and the fact that the site generally receives fewer visitors. The visibility of these artworks however, although high, it is influenced greatly by the surface of the engraved panel. (See visibility analysis at section g). The majority of sites hosting these panels are found at various locations within the site and they are all easily accessible. Examples of panels under this category are OEF61/01, OEF61/13, OEF61/14, and OEF61/15 etc.

These were followed by the panels oriented northerly, that account for 32% of the corpus. All the panels with this aspect were equally recorded on the southern slope. They too receive a fair amount of sun exposure throughout the day, except in the late afternoon as the northern slope and vegetation cover obscure them. Their visibility is slightly reduced unlike those oriented easterly. This, once again, is influenced greatly by the size of the artworks, the positions of the panel in the landscape, the size and shape, technique of engraving of the panel as well as the surface colour of the engraved area. Examples of these panels are: OEF61/08, OEF61/18, OEF61/25, and OEF61/30 etc. Group C accounts only 8%, while Group D represents 10 % of the engraved surfaces, most of which were recorded in the northern axis and few on the southern axis. These panels also share corresponding features on rock painting sites under these categories. Their visibility is lower compared reduced angle of sun exposure. These panels were primarily difficult to see given the fact that panels are under the shadow of the slopes and vegetation. Examples of these panels are OEF61/01, OEF61/03, OEF61/05, OEF61/48 and OEF61/22 etc. the majority of the panels are sloping either backwards making them difficult to identify or directly in the river course.

g. Panels and artworks visibilities and locations in the site

The seventh landscape variable that was examined in the study is the visual or visibility analysis of the engraved panels in the site. The visibility analysis examines the optical ranges from which panels containing the engravings and their artworks are viewed in the landscape. Just as in the paintings analysis, the visibility analysis for the engraved panels in the site was categorized into four main classes according to the number of panels: up to 1m optical range, up to 3 m, up to 15 m, and greater than 15 m ranges as reflected in (Table 6.19 and Fig. 6.168)

Visibility Range (m)	No. of Panels (n=50)	% of Panels	Sum of Figures (n=458)	% of figures
1m	23	46%	78	14.2%
3m	4	8%	41	7.5%
15<	16	33%	175	31.9%
15>	7	13%	254	46.4%

Table 6.19 Visibility analysis of engraved panels according to number of figures in Site OEF61.

The visibility database search indicates 23 panels, representing (46%), containing 78 (14.2%) engraved panels and their figures, are visible only from a 1m optical range. The figures on these panels can only be seen upon standing directly in front of the panel. The visibility range of these figures is influenced by a number of factors, such as the size of the figures and panels hosting the figures (which is often very small), panels' orientation and angle of their inclinations in the landscape, as well as the colour of the panel surfaces which provides no contrast to the engraved surfaces (see Fig. 6.165). Some of these panels, i.e., OEF61/21, OEF61/37 are hidden behind other boulders. Panels containing the artworks viewed under a 1m optical range can be classified as 'very private' which means that they can only be viewed by one person at a time According to (KECHAGIA 1995, 1996 cf. LENSSEN- ERZ 2004:140), panels under this category are found in the engraved surface located 2 (see Fig. 6.168 and Table 6.20).

The visibility analysis of up to 3 m ranges is one the least represented, with only 4 panels, accounting for (8%) of the panels, containing the smallest number of artworks 41 (7.5%), viewed at that distance ranges. Panels under this category are found in engraved surfaces located at 1, 3 and 7, as shown in Figure 6.168 and Table 6.20). Examples of such panels in our study areas include OEF61/09, OEF61/20, OEF61/42 and OEF61/43. As with the previous panels containing artwork, this category occupies several locations in the site and the artworks can be viewed from short distances. Visibility analysis of the third category is that of panels found up to 15m distance ranges. They are the second most dominant panels; there are about 16 panels, representing 33%, containing 175 artworks, 31.9% of the total artworks. Panels with artworks under this category are also found on different panels occupying various locations in the landscape, such as 1, 3, 4 and 6 position.

Their visibility is quite high and most artworks can be seen from the bottom of the site (river course) or while standing at several locations in the site. Most of these panels can be viewed by a large gathering at once at various positions in the site, i.e., at bottom of the site and the

middle slope. They can, therefore, be classified as ‘public art’, according to the binary classification by (KECHAGIA 1995, 1996 *cf.* LENSSEN- ERZ 2004:140), because they can be seen from considerable distances. These are equivalent to those viewed at greater than 15 m ranges. They account for 7 (13%) of panels that contain 254 of artworks (46.4%). Such artworks are found on panels located mainly at location 3 and 6.



Figure 6.168 Shows the location of engraved panels and the position of artworks on the panels. Original pencil drawings of the site layout by Fousy Shinana-Kambombo.

Engraving Location	Definition
1	Middle of the panel sloping upwards (the panel without contrast).
2	Close to the ground on the rear or the lowest section of a slanting ceiling of the boulder, less than 10cm.
3	On a back of a boulder where engraving location 2 is already occupied.
4	In the middle of a flat horizontal slab surfaces above a boulder which produces contrast

5	On a vertical wall, visible from the bottom of the riverbed/ river course (with/without contrast).
6	On the edge of a boulder entirely submerged in the river course.
7	On a perpendicular forehead of a boulder visible from the bottom of the riverbed. The boulder producing contrast.

Table 6.20 Revised definitions for the engraving locations as illustrated in (Fig. 6.175), after (LENSSSEN-ERZ 1989, cf. LENSSSEN-ERZ 2004:138)

The majority of these panels are placed in the open with good visibility while very few are placed in inconspicuous locations - hidden in-between boulders, often with low visibility. Moreover, the sheer number and diversity of these surfaces ranges from the vertical and horizontal dimension to the flat (planar) surfaces, upright surfaces sloping upward to those laid down in the riverbed. More often, the size of the panel does not determine the quantity of the figures, i.e., a large surface has more room for many figures than small surfaces, but often we found few engraved artworks in them as opposed to the small panels, which suggests that the panels were chosen deliberately, i.e., just like what the artist (s) chose to depict and what not to and how many to place on each surface. Added to this is the fact that the size of the engraved surface does not determine the figure's size or its visibility in the landscape as we observed in this study area. However, it is possible that space, surface color, visibility and the site orientation were determining factors, although not necessarily the decisive factors to behind the placement of the artworks on these surfaces.

h.Placement of artworks on the rock surfaces

The placement analysis investigated the exact location of the artworks on the boulder surfaces. They ranged from those occupying the top, middle, bottom, top and middle, middle and bottom, as well as to those occupying the entire panels. The placement of the engraved figures on the rock surfaces influences mainly the visibilities ranges of the artworks on the rock surfaces and, generally, in the landscape. As it has been indicated in the visibility analysis, the majority of the artworks can be viewed at greater than 15m range; this was possible because most of the figures are quite large, while their engraved panels produces contrasts which increases its visibility ratios.

Moreover, the position they occupy on their surfaces often enables them to be seen from a greater distances. The following Table 6.21 and Figure 6.169 provides the summary of the findings as well as details about the type of figures found on the different position in the panels

Position on the Panel (n=50)	Sum of panels (n=548)	% of Panels	Sum of figures	% of figures
Top	11	22%	91	16.6%
Middle	10	20%	50	9.1%
Bottom	11	22%	89	16.3%
Top & Middle	4	8%	32	5.8%
Middle & Bottom	3	6%	68	12.4%
Entire Panel	11	22%	218	39.8%

Table 6.21 Summary of the placement of the artworks in the panels at Site OEF61

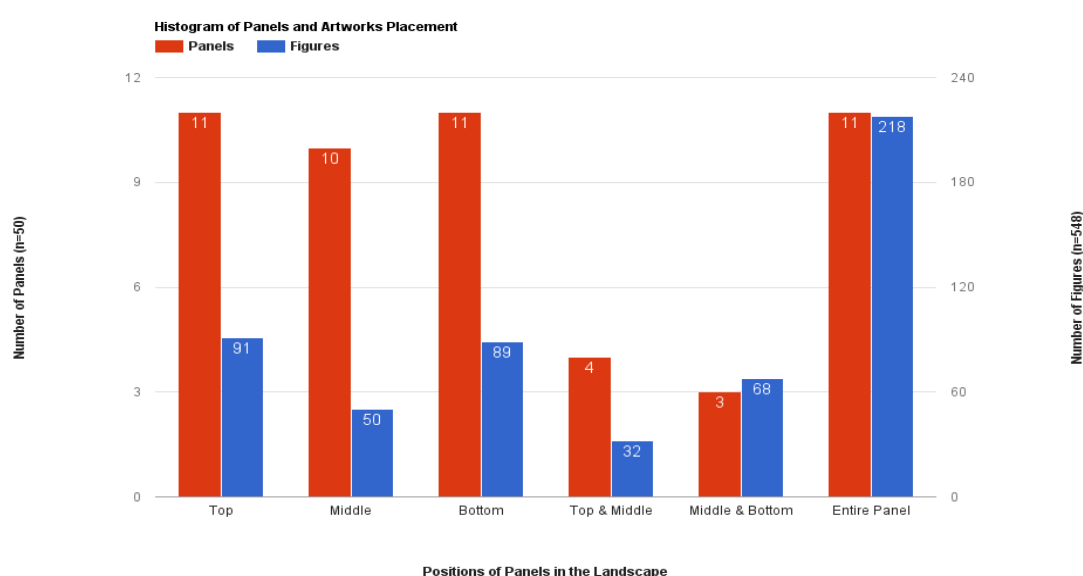


Figure 6.169 Histogram of the artworks placements in their panels at Site OEF61

The data search for the placement of the rock art figures on the panels identified six positions of rock art figures in the panel, including those that have been restricted to only the top 11 panels (22%), the middle 10 panels (20%), the bottom 11, (22%), the top and middle 4 panels (8%), those confined to the middle and bottom account 3 (6%) of the panel, as well as those occupying the entire panel space 11 (22%).

The placement analysis further shows that the number of artworks placed on top of the panel's accounts for 91 figures, representing 16.6% of the total artworks. An example of panels whose artworks are restricted to the top of the panels includes the artworks at panels OEF61/11, OEF61/24, OEF61/33, OEF61/34 etc.). However, about 6/11 panels with human footprints are placed on top of the panels (Fig. 6.170) either in juxtaposition against animal

figures or spoors or adjacent to other human footprints. The rest of the panels whose figures are placed on top of the panels' host mainly animal spoors (see Fig. 6.167 right).



Figure 6.170 Example of panels hosting figures placed on top of their panels. Image to the left shows Panel OEF61/33 (top far and 34 below - red arrows) hosting human figures. Image to the right shows the artworks placed on top of Panel (OEF61/24) containing mainly animal spoors and figures.

Artworks restricted exclusively to the middle of the panels are the third most represented panels and account for 10 panels, representing 20%, but with the second least quantity of the artworks, about 50 artworks, representing 9.1% (Fig. 6.171). These panels are widely distributed in the site, but mainly at the bottom of the slopes. These panels contain only animal spoors and figures. Examples of such panels includes panel OEF61/01, OEF61/03, OEF61/21 and OEF61/32.



Figure 6.171 Example of panels with figures placed in the middle of the panels. Left is Panel OEF61/01 with animal spoors. Right is Panel OEF61/50 depicting an animal figure - a rhino.

The visibility rangers of the artworks placed in the middle of the panels vary, depending on whether the engraved panels produces a contrasting colour beneath it or not. Those that creates the contrasting pale brown color underneath clearly stands out (Fig. 6.172 left) while those without dark-coloured surfaces do not reveal lighter colour beneath, which means that they have a low visibility rate, even though the artworks are larger in sizes (Fig. 6.168 right).

The engravings recorded at the bottom of the and lowest section of the rock surfaces of the panels were registered at 11 panels, 22%, containing about 89 figures, representing 16.3%. However, the visibility ratios of these panels were not influenced by the position of the artworks and the location of the panel in the landscape. Similar to those described in the previous category, these panels occupies various locations in the site, from those found in the river course, i.e., OEF61/49 (Fig. 6.172 left), those found on panels resting on top of other boulders, i.e., OEF61/47 (Fig. 6.172 right) and to those found at the bottom of the slopes, i.e., OEF61/41, OEF61/37 and OEF61/30 etc.



Figure 6.172 Example of panels with figures placed at the lowest section of the panels. Left is Panel OEF61/49 with animal spoor. Right is Panel OEF61/47 depicting an oval-shaped figure.

Panels with artworks in the top and middle of the panels is one of the lowest; there are 4 panels, accounting for 8%, while containing about 32 artworks, representing 5.8% in the site. These include panels found various locations such as the bottom and middle of the slopes. Examples of these panels are OEF61/02, OEF61/15, OEF61/17 and OEF61/27 (Fig. 6.173). Among these panels, only one, Panel OEF61/27, shows three human footprints, while the rest of them are comprised mainly various antelope spoor and figures.



Figure 6.173 Shows panels with figures placed at from the top up until the middle of the panels. Left is Panel OEF61/15 with antelope spoor of various sizes. Right is Panel OEF61/27 depicting three figures in juxtaposition to an animal figure, as well as numerous spoor

Another least represented figures are those restricted to the middle to the bottom of the panels. They account for three (3) panels, representing 6% and hosts containing about 68 artworks, 12.4% of the total figures. These comprised panels OEF61/06, OEF61/08 and OEF61/41. All these panels are located at the lowest bottom of the northern slope and their artworks can be clearly seen from a distance. The two panels (OEF61/08 and OEF61/41) are smaller and stand vertically, while the larger panel (OEF61/06) is an upright panel with its artworks facing upwards. The artworks on these panels (Fig. 6.174) consist mainly of animal spoor (antelope spoor and what appear to be an elephant trunk in juxtaposition to other animal figures, i.e., a lizard and tree-like figure – indeterminate).



Figure 6.174 Shows panels with figures placed in the middle to the bottom of the panels. Left is Panel OEF61/08 with antelope spoor in sizes adjacent to one of the indeterminate figures. Right is Panel OEF61/43 depicting two figures - a lizard at the bottom and an elephant in the middle right of the panel.

The last category is of the artworks that occupy entire panels. The panels account for 11 panels, 22%, containing the largest number of figures (218), representing 39.8%. These panels vary in size, shape, as well as in orientation, just like other panels. Their artworks are visible at various distance ranges while occupying several locations in the site, but mainly at the bottom of both slopes. The panels comprised of those with human figures (OEF61/14, /OEF61/35 and OEF61/36) (Fig. 6.175) and those that exclusively with animal spoors (OEF61/04, OEF61/10CLB, OEF61/12 etc.) as shown in (Fig. 6.176.)

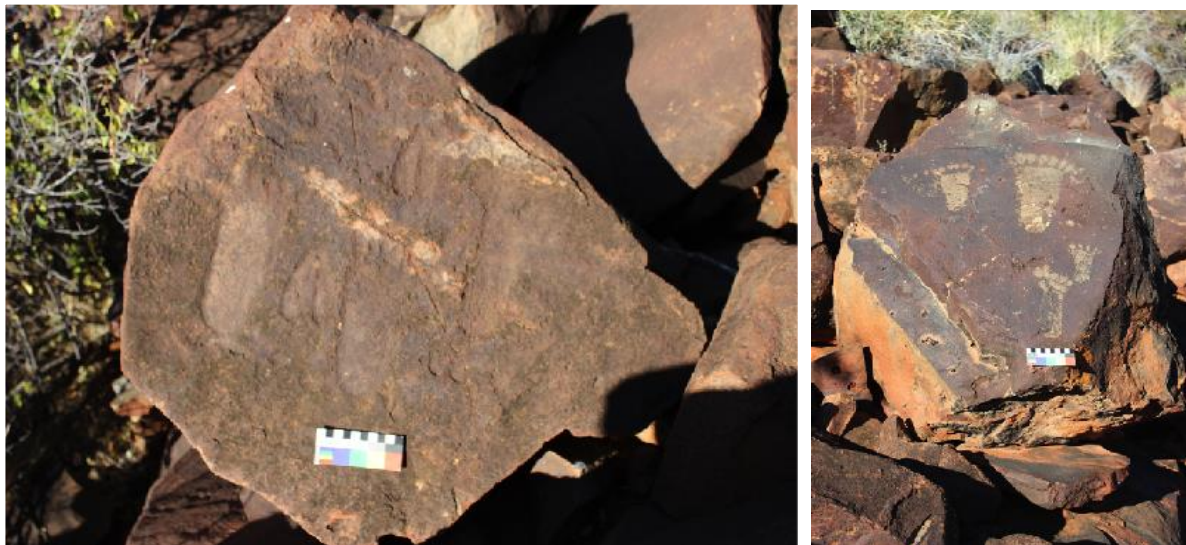


Figure 6.175 Shows panels with figures (human) that occupy the entire panels. Left is Panel OEF61/35 with three human footprints in juxtaposition to antelope spoors, while the image on the right is that of Panel OEF61/36 depicting only human figures.





Figure 6.176 Shows panels with figures (animal spoor) that occupy the entire panels. Left is Panel OEF61/14 with various antelope spoor, while the image on the right is that of Panel OEF61/12, also depicting antelope and zebra spoor.

i. Summary of spatial analyses

The rock art panels are distributed along an east to west axis that covers approximately 400 meters. The majority of the panels (92.2%) are located at the foot of an elevation along the banks of both axes, while the lowest (2%) is placed in the river course; their placement in the landscape varies from an isolated pairs of panels (various shapes and sizes) to large clusters of panels comprising of seven to twenty panels. Moreover, the diversity of these engraved surfaces ranges from surfaces in the horizontal dimension (flat/planar) to upright surfaces sloping upwards. The site topography indicates that the lowest 8% of the total panels occurs between elevations ranges of 1323 – 1328m above sea level which hosts 15.1% of the figures. These were followed by the panels occurring between 1329 – 1334m elevations, representing 67.2%. The bulk of these panels contain a total of 308 artworks, representing 67.2%. In these panels predominate animal spoors and few animal figures, while the last category of artworks, found between 1335 – 1340m elevations, accounts for 36% of the panels, containing 17.7% of the artworks.

Another aspect of the site context attributes that were investigated and recorded during this study is the proximity of panels to water points in the site. Rock art panels in the site are located along the banks of the river course. Therefore, all panels are located near water in form of the river and the springs. However, due to their various locations they occupy in the site, there is variability in their proximity to springs. The analyses indicated that 50% of the panels are within 100m from the first spring. Followed by 8% within 200m. While those found at 300 and 400m range from 6% and 36% from the first spring. Contrary are those located 100m from the second spring accounting 36%. These were equally followed by 25% of panels found in 200m of the same spring while 8% and 32% were confined within 300 and 400m of the second spring.

Springs are the natural depressions where water is preserved throughout the year in the site. Due to the presence of the active springs in the site, there are active trail systems around the site from the water points from game animals, which must have been used by game during prehistoric period, as the game' fresh spoors are compatible with the engraved spoors found in the site today. The accessibility analysis indicated that about 90% of the panels in the site are generally accessible. Such sites are found at various locations in the site such as at the foot/bottom of the slopes and in river course while panels with restricted access account for 10% were mainly found located on the vertical slopes. With regards to the orientation of the

panels, the analyses reveals the tendency by the engravers to orientate the sites easterly as 50% of the panels at the sites faces this direction. These were followed by those oriented northerly, registering 32% in the study while those that receives less light are those with southerly and westerly aspects, registering 8% and 10% of the total corpus. These results are very similar to the data obtained in the painted site.

The visibility database search indicates that the majority of the panels (46.4%) hold 14.2% of the figures visible from only 1m optical ranges, while the majority of the figures (46%) of the artworks) are 14% of the panels, are visible for a distance range greater than 15. However, the visibility analysis suggests that the distance ranges at which rock art figures can be viewed is largely influenced by a number of factors, including the size of the figures and panels with the figures, the position of the figures on the panel, panels' orientations and angle of their inclinations in the landscape, as well as the colour of the panel surfaces (which either produces contrasts or not to the engraved surfaces). The last important landscape analysis was the placement of the figures on the surfaces. The results indicate that the majority of the figures are those that occupy the entire panel (22%). Those containing the largest number of figures (39.8%) and the lowest category (6%) are those restricted to the middle to the bottom of the panels, while those hosting only 12.4% of the total figures.



“This is not a good time to view the artworks as the sun intensity is too much”
Mr. N!aniR!kxao 04th April 2015, Engraving site.

6.2.6.Part D: Engravings Morphological Variables

Part D presents the morphological variables of rock engraving panels recorded in Omandumba East farm. Rock Art morphological variables present the prevalence of rock engravings in the study area, analyses rock art elements and typology, techniques of production, superimpositions/ overlapping (if any), element counts, and surface archaeological artefacts present at the site, as well as conservation aspects of the panels.

a. Number of engraved figures and panels at Site OEF61

The dataset for rock engravings in Omandumba East farm recorded a total of 50 engraved panels containing an excess of 548 individual rock art elements. Information on the number of figures per panel was also obtained. The first analysis of the morphological variables established the number of rock engraving figures per panel. The analysis reveals a wide range of figures per panel, from one (1) to a maximum seventy-two (72), with the average number of figures per site standing at 8.9, as illustrated in the histogram (Fig. 6.177).

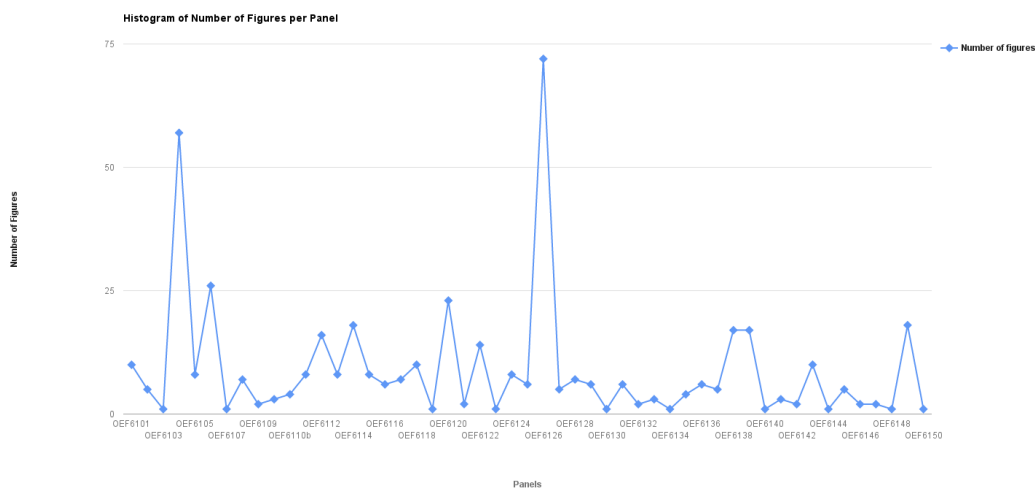


Figure 6.177 shows a histogram of total number of rock engravings figures per panel of Site OEF61.

b. Engravings' prevalence in Site OEF61

The engraving repertoire shown in the histogram above (Fig. 6.177) reveals a total of 548-recorded figures. We categorized and assigned both elements in the designated groups based on their morphological references, even if their identities have not been established. This according to Hipolito Collado (COLLADO 2014:145 *cf.* COLLADO 2006) is critical in order to avoid inconsistencies and to reach a far greater significant unity for the entire graphic set.

For this reason, the site's figurative typology is predominant of identifiable zoomorphic representation with a total of 364 individual elements representing 79.5% of the total elements. Following zoomorphism taxa is the indeterminate category, which account to 47 elements representing 10.3%. The category of anthropomorphs accounts for 7.4%, followed by the least category of abstract representations at 2.8% (Table 6.22 and Fig. 6.178).

Elements	Sum of Figures (n=458)	% of Figures
Anthropomorphs	34	7%
Zoomorphs	364	80%
Abstract: Lineal, dots and ovals	13	3%
Indeterminate	47	10%

Table 6.22 Presents the summary of the total number of elements recorded at Site OEF61.

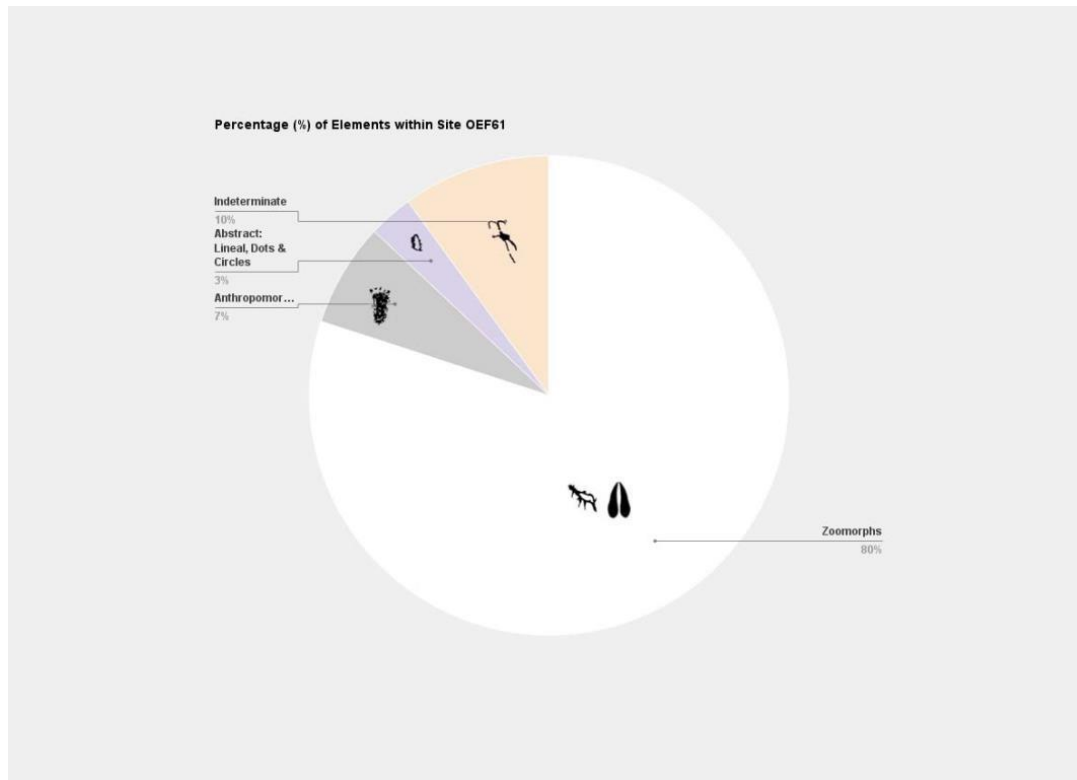


Figure 6.178 Presents the percentage of all elements recorded at Site OEF61.

c. Morphology and Style of engraved elements








c.1. Anthropomorphic Representations

At many rock engravings sites in Namibia, there is a persistent presence of human representations in the form of footprints and, to some extent, of handprints. In all these instances, these depictions form one of the least represented symbolic expressions, particularly in the antiquity of rock engravings. According to Ernst-Rudolf Scherz, (SCHERZ 1975), human representations in a form of hands and footprints makes up only 2% of the overall engravings, as opposed to 62% in the paintings observed at major rock engraving sites in Namibia.

The current site repertoire in site OEF61 recorded at 34 (7) human footprints found at only 9/50 engraved surfaces (see Fig. 6.179, Fig. 6.180 and Table 6.23), with the majority

clustered in one locality in the southern slope of the site, while only one (OEF61/36) is found on the northern slope. The panels with human figures are concentrated approximately within 5 meter's reach of each other, and most of them have been juxtaposed with animal figures or spoors or adjacent to other human footprints. There is one case where in one panel (OEF61/33) only one human figure does not share the panel with other figures (i.e. animals or human); while the rest of them are juxtaposition and adjacent to 2 or 12 figures on the same panel.

Map Legend

-  Permanent Water Points / Springs
-  Engraved Boulders / Panels
-  Path / Rivercourse
-  Small Bridge
-  Basalt Boulders
-  Commiphora Saxicola Arbuste
-  Acacia Tree

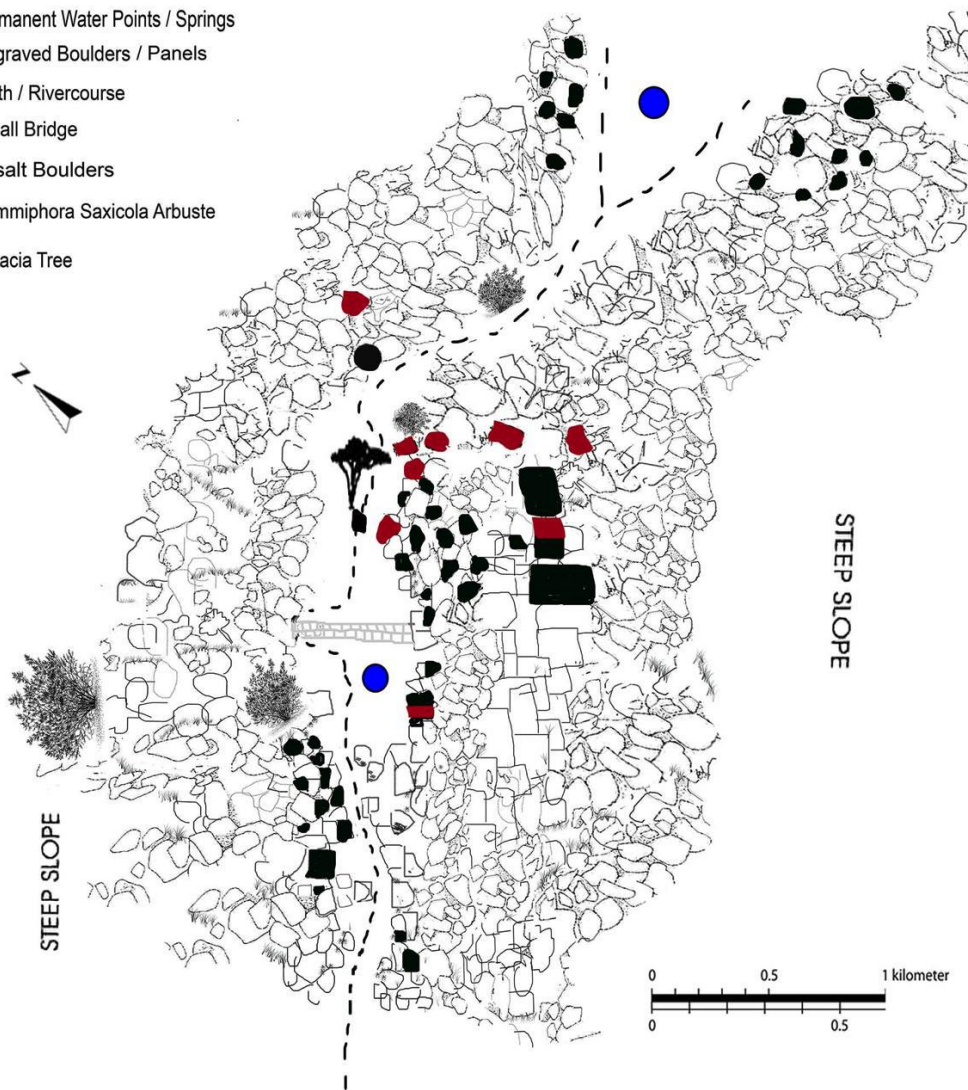


Figure 6.179 Indicates the locations and distribution of human footprints (in red panels) at Site OEF61.



Figure 6.180 Shows various forms of human depictions recorded in Site OEF61.

All these engraved human footprints represent a full foot (outlined with its cortex removed or intact as well as the fully engraved) with the exception of two footprints whose depictions only shows its frontal, recorded at Panel OEF61/33 (Fig. 6.180 {17 & 34}). Furthermore, the majority of human depictions are naturalistic, with anatomical references similar to those of contemporary human feet. The prints are very detailed; exceedingly simple schematization are used to represent such figures, while some are schematic but possess explicit visual resemblance of the human prints. The prints are shown adjacent to each other singly or simply in juxtaposition and on the same panel in-group as the twelve, while many are depicted in pairs (but representing various individuals – as their sizes, shapes and even the foot represented differs).

All footprints are facing upwards- regardless of the panels' orientations, but with varied visibility ranges since they occupy different parts of the engraved surfaces.

Two pecking techniques and styles have been established among the anthropomorphic representations. The first technique and style includes footprints that have been outlined only with their cortex intact inside the outlined figure (see also Fig. 6.177 {15 & 16}). Here, the

artist(s) chose to incorporate the natural background of the rock surface to complete the footprint without filling in. In this case, the footprint is seen interacting, not only with natural features in the rock surface, but also with the animal figures on that panel. Furthermore, these figures have been lightly pecked with small thin peck marks. In the human repertoire, such depictions are less common and were recorded only at one panel, which was Panel OEF61/30, representing 6% of total human representations. These depictions, although having a complete foot, a well-shaped sole and complete digit/toes, are quite schematic in the sense that the artist(s) only depicted distinguishable marks that were probably deemed relevant. They are also slightly larger than life-sized feet.

The panel containing the artwork is located at the extreme bottom of the slope, sitting at the edge of the riverbed on the southern slope. It comprised of a thin fracture cutting the panel in two and, in doing so, separating the depicted human footprints. Such fractures give the impression that they might represent a path, a route or other landscape features such as a track. Such a track then leads up to three to four panels on a steep slope that have been similarly pecked with other anthropomorphic footprints and which in a commanding position on both vertical boulders faces.

The second technique and style, which predominates, represents 94% of the mainly naturalistic engraved footprints. Figures under this category are fully pecked footprints with their cortex removed, as shown in (Fig. 6.181). They are equally detailed, some with simple schematization. Few of these have complete toes, while the majority has either incomplete or extra digits, ranging between four to six toes. I could not establish any particular function or reason for the incomplete or extra digits among human figures. However, I will not rule out a conservation challenge (such as fading or deteriorations of part of the figure – to be included in the indeterminate figures) or possible cultural factor or an omission from the artists, but there are no convincing evidences for these postulations. Furthermore, footprints are sometimes depicted as a single footprint or in a pair (two), but not matching and sometimes they appear in a line also suggesting a track. These footprints certainly have physical morphologies similar to those of real-life human prints feet.



Figure 6.181 Left image shows outlined figures with their cortex inside at Panel OEF61/30. Right Image shows fully engraved footprints at Panel OEF61/14

Almost all human footprints have been presented from a front perspective showing their frontal and heel parts and oriented in the same direction, giving a certain degree of upwards movements. Those that are depicted singly are not associated with other figures, but are adjacent to other engraved panels found in the same locality and, generally, the entire site.

Panel No.	No. Of Figures	Part of foot	Size (cm)	Infant	Young	Adult	No. Of toes	Right/ Left or indeterminate	Gender
EF6114	12	Complete	22cmx10cm, 13cmx9cm, 13xmx7cm, 14cmx4cm, 11cmx4cm, 12cmx7cm, 13cmx6cm, 10X4cm	3	1	8	Range between 3, 4 and 5	Right	Indeterminate
OEF6122	2	Complete	4cmx3 cm and 5cx7cm	-	2	-	5 each	Right	Indeterminate
OEF61/26	3	Complete	23cmx11cm, 18cmx7cm and 11cmx6cm	-	Indeterminate	Indeterminate	5 each	Right	Indeterminate
OEF6127	2	Complete	22cmx12cm and 17cmx8cm	-	1	2	5 each	Right	Indeterminate
OEF6230	2	Complete	13cmx19cm and 9cmx 7cm	-	-	2	5 each	Indeterminate	Indeterminate
OEF6133	1	Frontal	11cmx12cm	-	-	1	5	Indeterminate	Indeterminate
OEF6134	2	Complete	18cmx0 cm and 9cmx 6cm	-	1	1	5 and 6	Indeterminate	Indeterminate
OEF6135	5	Complete	18cmx10, 9cmx6cm, 7cmx4cm, and 5cmx5cm	-	-	-	5 each		Indeterminate
OEF6136	4	Complete	25cmx19cm, 13cmx8cm, 18cmx 9cm, 12cmx8cm and 10cmx9cm	2	1	3	4 to 7 toes	Indeterminate	Indeterminate

Table 6.23 Details the number of human footprints recorded in the Omandumba East farm site OEF61.

c.1.1. Morphologies of Human Footprints

Data presented in Table 6.23 indicates that a total 33/34 human footprints are complete human representations (Fig. 6.182), while only two figures recorded at Panel OEF61/33 are presented with their frontal without its heel (Fig. 6.183) The figure measures 11cmx12cm and its size and shape suggest that it's likely to have been an adult imprint. However, we could not determine whether it's a right and left foot as the index toe is not well defined and all the five toes are same size and length. Its internal arch, however, points towards a right foot (see Panel full description).

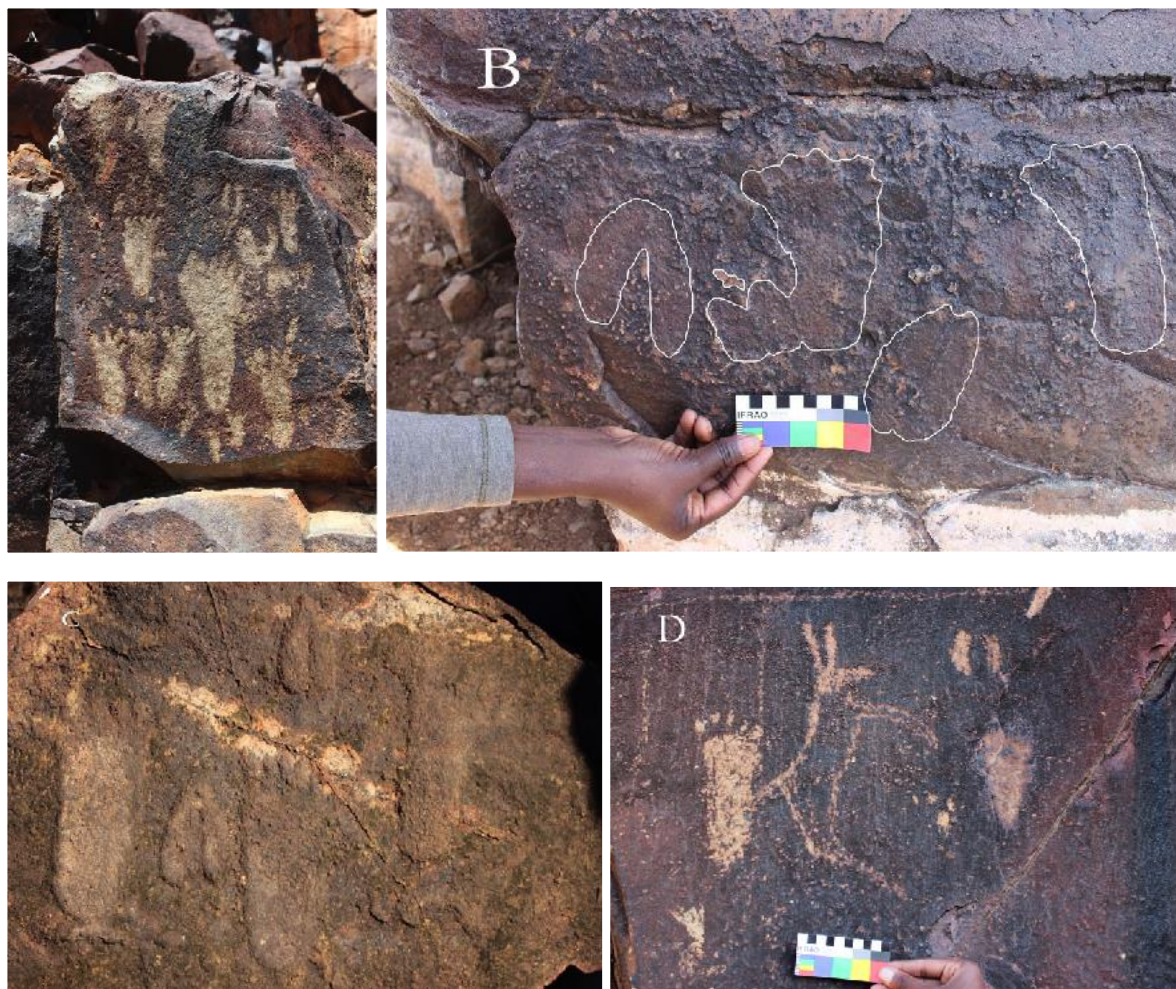


Figure 6.182 Presents some of the complete human footprint with their heels. (A) Panel OEF61/14. (B) OEF61/22. (C) OEF61/35 and (D) OEF61/27. All figures in 10cm scale.

These depictions having complete feet and well-defined soles; some have extra or missing digits, while some appear to be slightly larger or smaller than life-sized feet. Some of the footprints, especially the smaller ones recorded at Panel OEF61/14, are quite strange, both in morphology and size. However, all the data and their juxtaposition to animal spoor in the site

adds crucial dimensions to the interpretation of functional morphology and it enhances our understanding regarding social behaviour.



Figure 6.183 Presents a human footprint without its heel, recorded at Panel OEF61/33.

c.1.2. Gender and Identities

The gender of human footprints has not been determined although the imprints come in varied dimensions and morphologies. The local San informants were of the opinion that men generally have longer, broader feet than women for any given stature. In our discussions, they stressed that male feet differ from female feet in a number of shape characteristics, particularly the arch, the lateral side of the foot and the ball of the foot.

c.2. Zoomorphic Representation: Animal spoor, figures and a handprints

Zoomorphic taxon represents animal spoor, figures and handprints. The faunal taxa predominate, with an excess of 364 depictions, representing 80% of the engravings repertoire (Table 6.24). The taxa therefore comprised of 344 (95.4%) animal spoor, representing a variety of individual species, predominantly large and small antelope spoor, as well as spoor tracks of mega fauna, i.e., elephant, rhino and zebra, reflecting the local faunal species found in the same environment today. In addition to animal spoor, detailed field data further recorded an additional 17 animal figures comprised of various species, including 5 giraffes, 5 rhinos, 2 duiker bucks, 1 oryx/gemsbok, 1 kudu, 1 springbok including a lizard 1, as well as 1 baboon handprint, all of which have been represented in the sample.

The class of animal figures that could not be identified (‘indeterminate’) is less frequent in the study, accounting for only to 3 elements. These incorporates all animal figures that have the basic anatomical parts (head, torso and limbs), allowing them to be included in the zoomorphs category, but whose biological identifications could not be established on account of inadequate anatomical references pertaining to the animals. The following table presents the summary of the findings.

Zoomorphs Taxa	Sum of Figures (n=364)	% of Figures
Spoors	344	95.4%
Giraffe	5	1.4%
Rhinoceros	5	1.4%
Duickerbuck	2	0.5%
Oryx	1	0.2%
Kudu	1	0.2%
Springbok	1	0.2%
Lizard	1	0.2%
Baboon Handprint	1	0.2%
Indeterminate Zoomorph	30	0.8%

Table 6.24 Summary of individual animal species represented in the engraving repertoire of Site OEF61

Panels showing animal figures and spoors are widely distributed across the site along both slopes. However, I observed a tendency to place animal figures (either 1 or 2) solely on their own panels without any association or their being juxtaposed with other animal figures or spoors in the site. For instance, animal figures were recorded at twelve engraved surfaces. About 9/12 of those panels constitute only animal figures without any association with either human footprints, i.e., panel OEF61/03, OEF61/07, OEF61/09, OEF61/19 and so forth (see Fig. 6.184).

While very few animal figures have been juxtaposition juxtaposed either in the panels showing human footprints or animal spoors (OEF61/41 and OEF61/44, see (Fig. 6.185). Those that have been juxtaposed with animal spoors are often placed at the lowest section of the panel, while the spoors (not matching animal figure) are placed at the top of the panel.



Figure 6.184 Some of the panels showing solely animal figures. Left image, Panel OEF61/03 while right image shows Panel OEF61/19.



Figure 6.185 Example of panels showing solely animal figures in juxtaposition to animal spoor at the bottom part of the panel. Left image, Panel OEF61/37 while right image is Panel OEF61/41.

Another observation in regard to the panels displaying animal figures is the fact that these panels do not appear together or in the same locality (cluster) in the site, but are found in different locations (often hidden and secluded) in the site, mostly on the northern slope. Furthermore, the boulders give the impression that they were chosen deliberately because they seem to have been placed on darker surfaces, producing little or no contrast and low

visibility. Following the detailed summary of the animal species, individual species are presented in Table 6.24.

c.2.1.Spoors (344)

The dominance of animal spoors comes as no surprise since they are most widely represented depictions in the engravings in Omandumba (Fig. 6.186) and generally in Namibia. These remarkable depictions come in a variety of shapes and size and represent a range of animal species. The spoor depictions are very detailed, with individuals usually shown either singly, in pairs or in small groups consisting of 4 or in a large group with over 60 spoors. Most of them have been juxtaposed near each other but without contact. All the spoors appear complete, but we could not determine whether they represents represented individual animals or not as some do not match. Nonetheless, they reflect the range of local fauna found in the same environment today. In fact, some of the spoors of the same species have been seen at the two springs in the site itself. It is possible that the same animal specie were around where the artworks were produced.

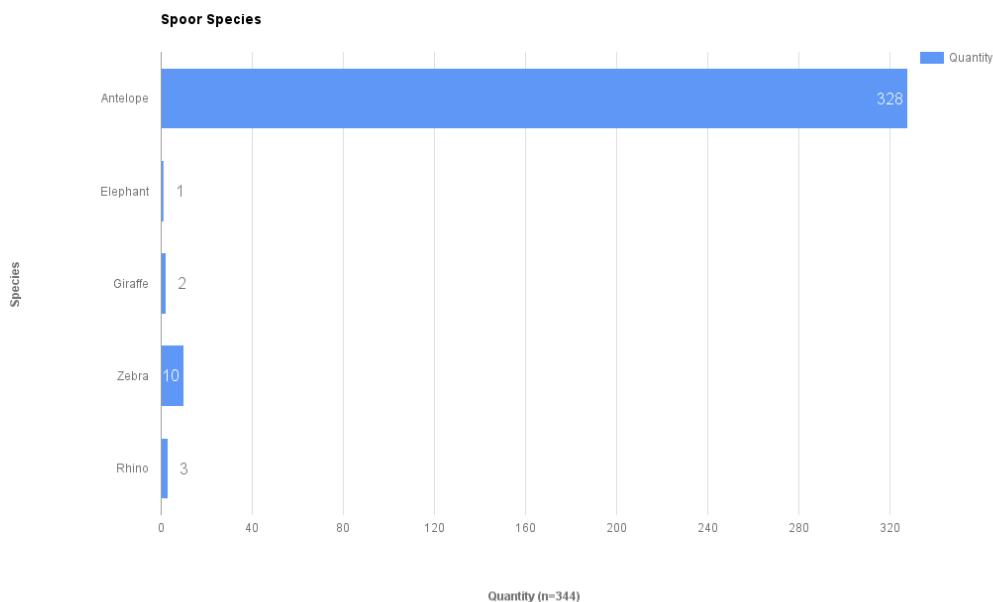


Figure 6.186 Shows the prevalence of spoor species recorded in the site.

About 95.3% of the spoors represent antelope species, i.e., duiker (*Cephalophinae*), klipspringer (*Preotragus Oreotragus*), springbok (*Antidorcas marsupials*), kudu (*Tragelaphus Stepsiceros*) and oryx/ gemsbok (*Oryx Gazella*) as shown in (Fig. 6.187 -6.191). Following

the antelope in quantity are large and powerful animals such as the zebra (10), 2.9%, the rhino (3), 0.9%, the giraffe (2), 0.6%, and an elephant spoor (1), 0.3% (see Table. 6.24).

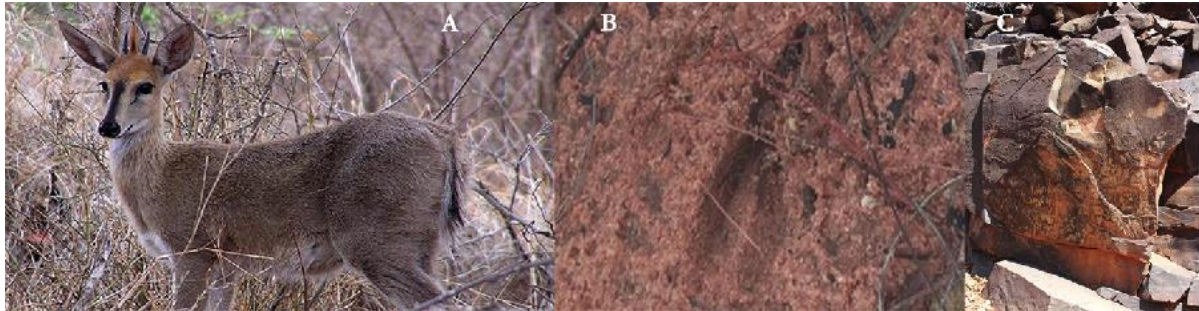


Figure 6.187 (A) The duiker buck, (B) duiker buck fresh spoor and (C) engraved duiker buck spoor at Panel OEF61/04. All spoor at 10cm scale.



Figure 6.188 (A) klipspringer, (B) klipspringer traced spoor and (C) engraved klipspringer spoor at Panel OEF61/16. All spoor at 10cm scale.

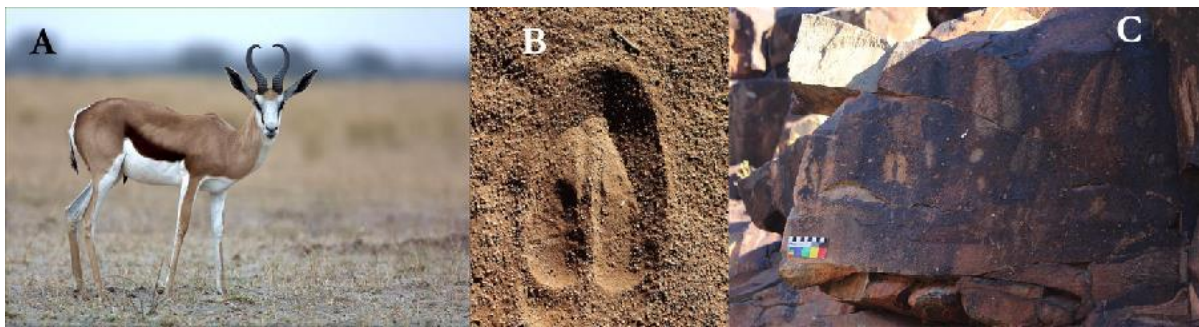


Figure 6.189 (A) springbok (B) springbok fresh spoor and (C) engraved springbok spoor at Panel OEF61/15. All spoor at 10cm scale.



Figure 6.190 (A) Kudu (B) kudu fresh spoor and (C) engraved kudu spoor at Panel OEF61/31. All spoor at 10cm scale.

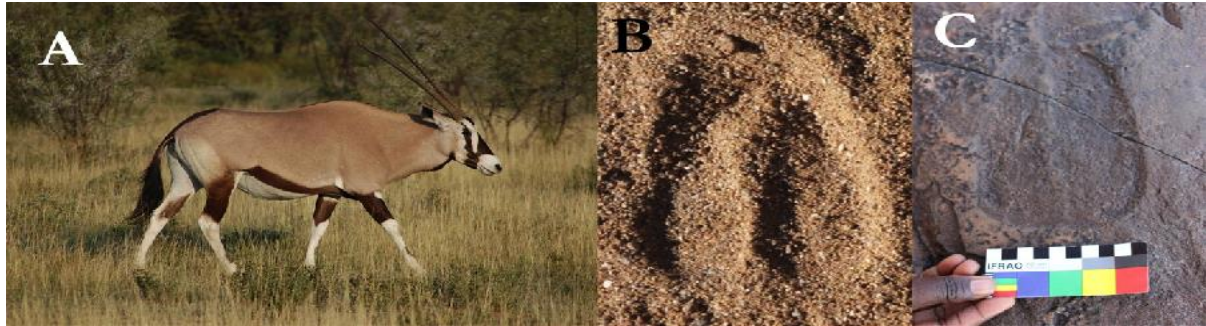


Figure 6.191 (A) Oryx (B) Oryx fresh spoor and (C) engraved oryx spoor at panel OEF61/22. All spoors at 10cm scale



Figure 6.192 (A) mountain zebra (B) zebra fresh spoor and (C) engraved zebra spoor at Panel OEF61/01. All spoors at 10cm scale



Figure 6.193 (A) rhino (B) rhino fresh spoor and (C) engraved rhino spoor at Panel OEF61/11.

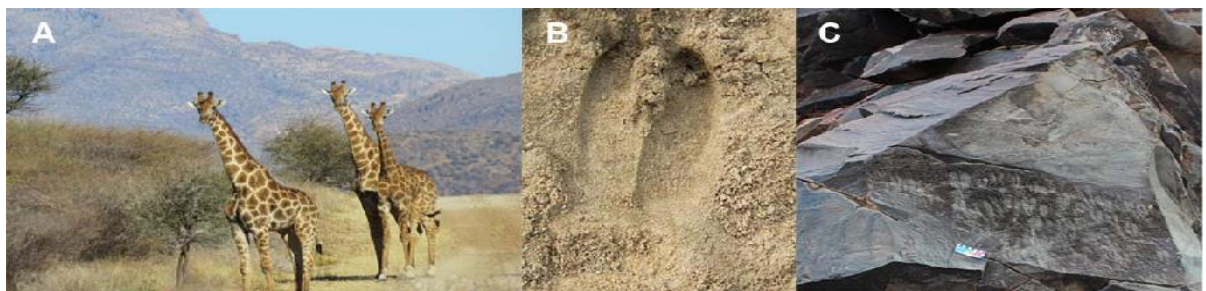


Figure 6.194 (A) giraffes (B) giraffe fresh spoor and (C) engraved giraffes spoors at Panel OEF61/06. All spoors at 10cm scale



Figure 6.195 (A) elephant (B) elephant fresh spoor and (C) engraved elephant spoor at Panel OEF61/25. All spoors at 10cm scale

c.2.2.Giraffe (5)

It is one of the common animals in rock art, especially in paintings of the Omandumba Farms, generally in Erongo and in Namibia at large. In fact, the giraffe has been identified as kind of a replacement of the eland in the southern African rock art. In the engraving repertoire, giraffes are recorded in five panels: OEF61/09 (2), OEF61/37 (1), OEF61/43 (1), and, lastly, at Panel OEF61/34 (1), as shown in figure 6.196.

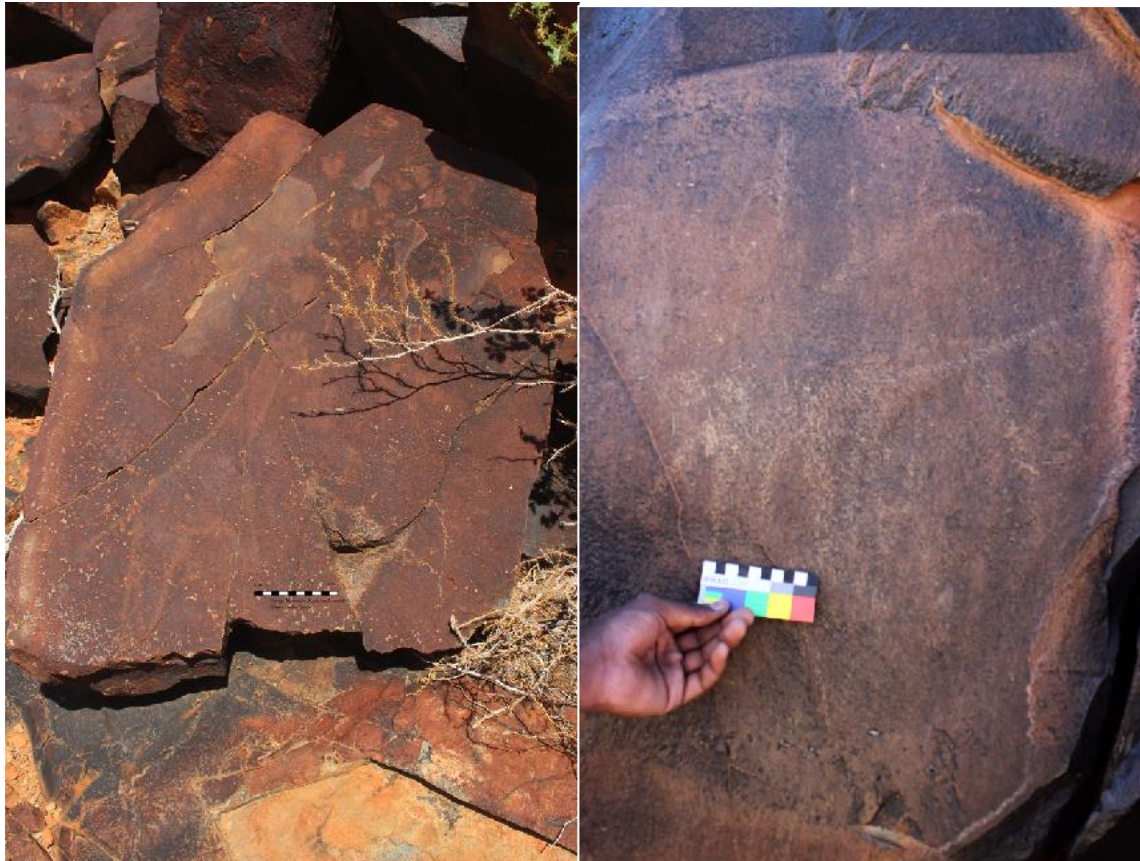


Figure 6.196 Left, is a depiction of the largest giraffe in the site at Panel OEF61/37, right, are the depiction two slightly faded giraffes at Panel OEF61/09.

Like most of the panels containing animal figures, none of these panels are adjacent to each other. They have been distributed all over the site, with the majority found in the southern axis as opposed to the northern slope. Three of the giraffes are found in extreme proximity to the trail and the first spring in the site (OEF61/09 and OEF61/37), while the rest are found in the upper slope. Most of them have been placed on dark surfaces with reduced visibility but not in hidden surfaces. Some of them are depicted single singly (but in association with only other animal spoors) or in pairs (without any other associated animals). Their bodies generally differ in size, with the larger one measuring 76cmx60cm, while the smaller has the

dimensions of 10cmx17cm in size. Furthermore, they are shown with their tails extended and full outlined bodies rising elegantly in the air without their hooves.

c.2.3.Rhinoceros (5)

These large often-solitary herbivorous mammals represent 1.4% in the zoomorphs repertoire (Fig. 6.197). They have been recorded at four panels, namely, Panels OEF61/26 (2), OEF61/39 (1), OEF61/48 and OEF61/50. In the site, they are placed at different locations exclusively on the southern slope and always at the bottom of the slope. At two panels, they are depicted in juxtaposition and in association with a herd of other animal spoors such as the kudu, springbok and zebra. In one panel, a rhino is portrayed at its own panel walking in isolation, while in the last panel; it is shown superimposed over an oryx figure. Figure 6.194 below presents some of these figures. Overall, these mega fauna are always depicted in lateral perspective.



Figure 6.197 Left, is a depiction of the rhino at Panel OEF61/26. Bottom, is the depiction of a rhino (red) in a bicephalic scene with an oryx (yellow) and another indeterminate, superimposed animal figure (blue) at Panel OEF61/39

c.2.4.Oryx (1) and Springbok (1)

An oryx animal figure was also recorded at Panel OEF61/39 found in a bicephalic scene (sharing the same body but with two different heads) with a rhino and another indeterminate animal figure superimposed on a rhino (Fig. 6.198). See Panel OEF61/39 for full description. The springbok is also one of the least represented figures in the site and, generally, in engravings in Namibia. In the site inventory, a springbok figure was recorded at Panel OEF61/07 and placed on its own panel without any association with other figures, forms or spoors. Its engraved surface is also darkish; it has restricted visibility and is slightly hidden behind a couple of boulders. The figure is less stylized and less detailed, but its basic references (head, legs and body) have been presented (Fig. 6.198) below.

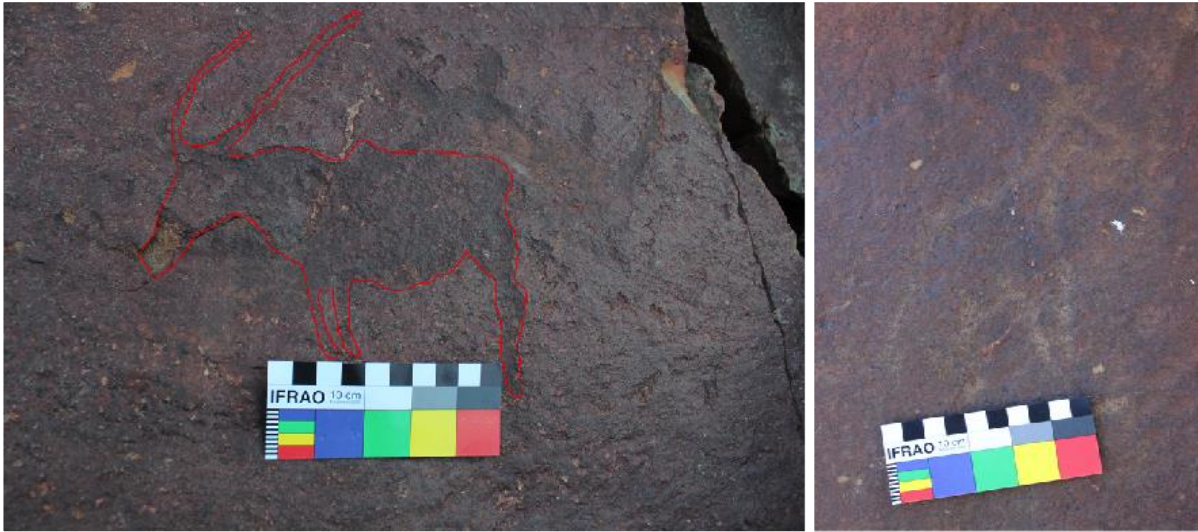


Figure 6.198 Left, is a depiction of an oryx at Panel OEF61/39, while the right image shows a faded figure of what has been established as a springbok at Panel OEF61/07

c.2.5.Lizard (1) and Baboon Handprint (1)

The engraving dataset also comprised one of the uncommon depictions in of Namibian rock art - a reptile figure depicting most likely a monitor lizard (*Varanus niloticus*), which was recorded at Panel OEF61/41. Its physical morphology is consistent with that of a reptile. At Twyfelfontein, two engraved reptiles depicting what is thought to be crocodiles were recorded at one of the panels (VAN HOEK 2002). The panel showing this figure is located at the lowest section of the boulder partially submerged in the riverbed.

The figure has been juxtaposed against another indeterminate spoor. A baboon handprint has also been accounted in the engraving repertoire at Panel OEF61/24 and placed among antelope spoors and some indeterminate spoors. The figure is not well defined, but its morphology point to baboon print as shown in Figure. 6.199.



Figure 6.199 Left image shows a depiction of a reptile at Panel OEF61/41, while the right image shows what is likely to be a baboon handprint pointed by a red arrow at Panel OEF61/24.

c.2.6.Abstract: dots, oval, linear and circle forms

The term ‘abstract’ describes a series of rock art elements that do not fit neatly in other categories and which display some degree of variability in their designs. In the repertoire of the rock engravings at our site, we recorded a total of 13 abstract figures representing one of the lowest percentages in our study, about 3% of all artwork at the site (Table. 6.25 and Fig. 6.200). These figures mainly dominated by the features of abstract signs namely, dots, oval, linear, circles – sometimes outlined circles in filled with small pecked marks inside with its cortex removed.

Panel No	No. Of Elements	Forms Depicted	Description
OEF61/02	3	Dots	3 Three individual peck marks in the form of dots immediately below the spoor figure measuring between 1cmx1cm.
OEF61/25	1	Lineal	1 One single deep pecked lineal figure on the right side of the panel in between two antelope spoors measuring 23cmx1cm.
OEF61/27	3	Lineal	3 Two lineal figures found on the panel. One form broken stripe of fine lines/hairlines of an undetermined figure- but appears slightly fresh. While the other is another is an undetermined pecked linear figure measuring 7cmxcm, and the shorter 4cmx5cm and one unidentified figures in a V-shaped form measuring 6cmx4cm.
OEF61/31	5	Circle Linear	2 One in filled circle measuring 5cmx4cm immediately next to the human footprint flanked by another indeterminate figure above it. There are also some of two linear figures located below and slightly on top of human footprint below the fracture fissure line. 2
OEF61/48	1	Oval	1 An outlined oval shaped abstract figure with its cortex intact is measuring 18cmx6cm with visual resemblance of an enclosure or a primate print.

Table 6.25 Summary of the abstract forms from Site OEF61

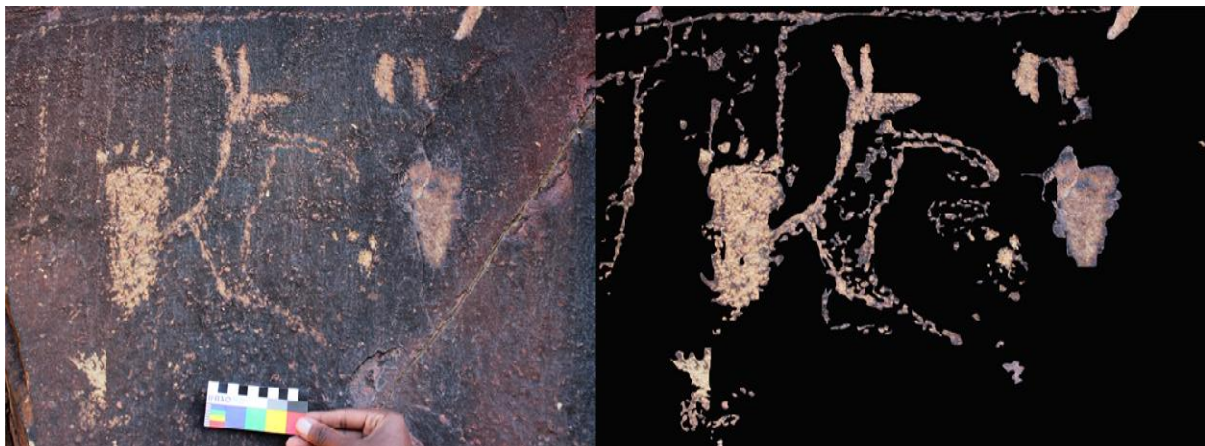
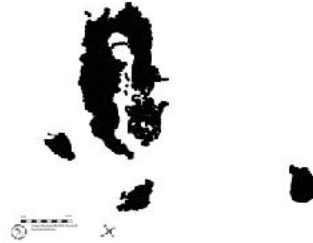
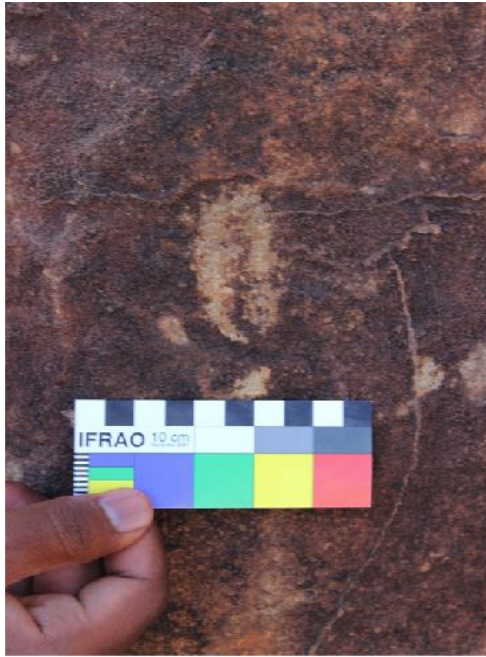


Figure 6.200-Left image shows a depiction of three small peck marks (dots) beneath a spoor fat Panel OEF61/02. Bottom Image shows three lineal figures placed on top of all the figures at Panel OEF61/27.

c.2.7.Indeterminate Forms

The engraving repertoire has also taken into account the taxonomical class of “indeterminate” accounts for 47 form, representing 10%. It comprised of figures that completely lacks diagnostic features (animal, human or abstract form) required to determine their forms. The indeterminate forms have been juxtaposed against other figures on various panels showing largely animal spoors at several locations in the site, i.e., OEF61/08, OEF61/23, OEF61/24, OEF61/32 and OEF61/40 among others. The following Figure 6.198 indicates some of the indeterminate forms under this category that were recorded in the engraving repertoire.



Figure 6.201 Top image shows some of the indeterminate figures at Panel OEF61/23, while the bottom image shows the indeterminate figure at Panel OEF61/08.

d. Techniques and styles of engraved figures at Site OEF61

Several rock art studies have allowed us to identify and to reconstruct the different techniques employed in the execution of rock engravings by prehistoric artists of Southern Africa (BUTZER et al., 1979; KI-ZERBO 1981; DOWSON 1992; LEWIS-WILLIAM 1997; OUZMAN 1992, 2007; KINAHAN 2004, 2006; CHIPPINDALE et al., 2014). In the Engraving repertoire, three engraving techniques have been employed in the execution of the engravings, namely, pecking (light and deep), scratching and polishing techniques.

Between the three identified methodologies, pecking is predominant predominates, accounting for 94% figures found at 42 panels in the site, of which 90% have been lightly pecked, followed by those that have been deeply pecked with 4%. In all these instances, each and every individual pecked mark differs both in size and depth, but both are rounded (Fig. 6.202).

Techniques	No. of Panels (n=50)	% of Panels	No. of Figures (n=458)	% of Figures
Light Pecking	38	76%	412	90%
Deep Pecking	4	8%	18	4%
Scratching	5	10%	10	5%
Polishing	3	6%	3	1%

Table 6.26 Presents the variables in technique analysis of engraved figures recorded at Site OEF61.

Furthermore, the pecked marks are generally finer with smaller and more controlled peck marks to define the subjects. These techniques are likely to have been achieved through the direct or indirect use of a crudely pointed lithic tool of flint, quartz, or with a hammer and punch combination by placing such tool element perpendicular to the rock surface. The light pecked engravings vary from a very simple or shallow peck mark in which the cortex of the rock is broken by many small blows to create lines and in-filled shapes of the figure. The deep pecking technique must likely be the result of continuous repetition and the successive use of the pecking action deep in the rock surface through indirect percussion perpendicular to the rock surface until the desired shape and depth of the shape was achieved.

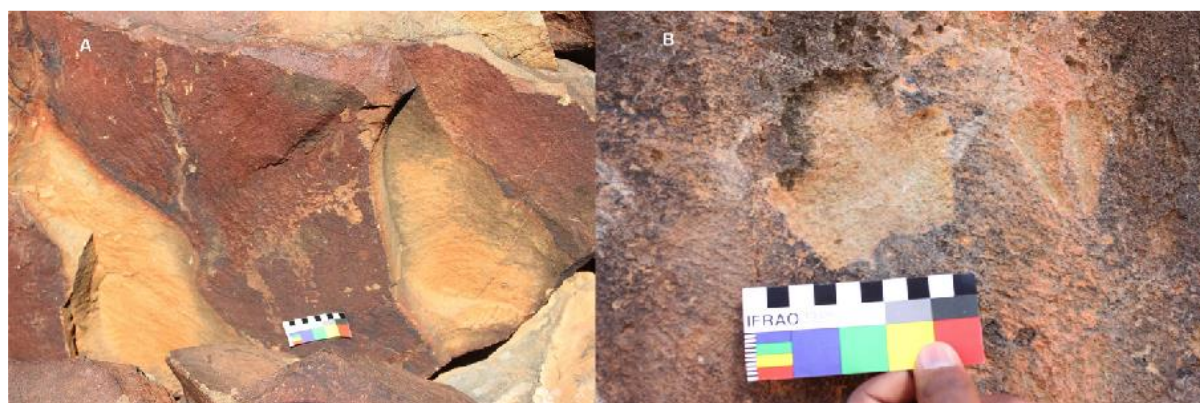


Figure 6.202 Two types of pecking techniques recorded in the site. (A) Light pecked animal figure recorded at Panel OEF61/ 19. (B) These are the deep-pecked figures of a rhino and an antelope spoor at Panel OEF61/11.

Another technique under this category was recorded at 3 panels i.e. OEF61/20, OEF61/22 and OEF39 and which comprised of only 3 figures, 1%, that were firstly pecked, with visible peck

marks, and then smoothed ‘polissoir’ either by the artists or as a result of weathering, given the fact that both panels are located in the middle of the river course way (Fig. 6.203) These artworks are deep pecked but not very visible to the naked eye probably because of the very dark surfaces or backdrop of the engraved surfaces which does not reveal a light colour beneath.



Figure 6.203 An example of figures that have been pecked firstly and then smoothed resulting in a smooth engraved surfaces. Image to the left is an oryx spoor from Panel OEF61/22. Image to the right shows several antelope spoors at Panel OWF61/20.

The final technique employed in the production of rock engraving figures in site OEF61 is scratching. Figures under the scratching technique comprised of thinnest lines (linéaire) as figures used to define the subject. These were recorded at 5 panels, representing 10%, and comprising about 10 engraved figures, representing 10%. Panels hosting these figures are Panel OEF61/09, OEF61/26, OEF61/43, OEF61/47 and OEF61/48.

The figures under this category have been lightly outlined onto rock surfaces and appear to be very recent (Fig. 6.204). The scratching technique was likely achieved through a very sharp pointed stone because the basalts rocks are relatively hard. Engraved figures, therefore, contain multiple individual thin scratched lines that define the engraved subject. The scratched marks are very thin; fortunately, some produced little contrast beneath.

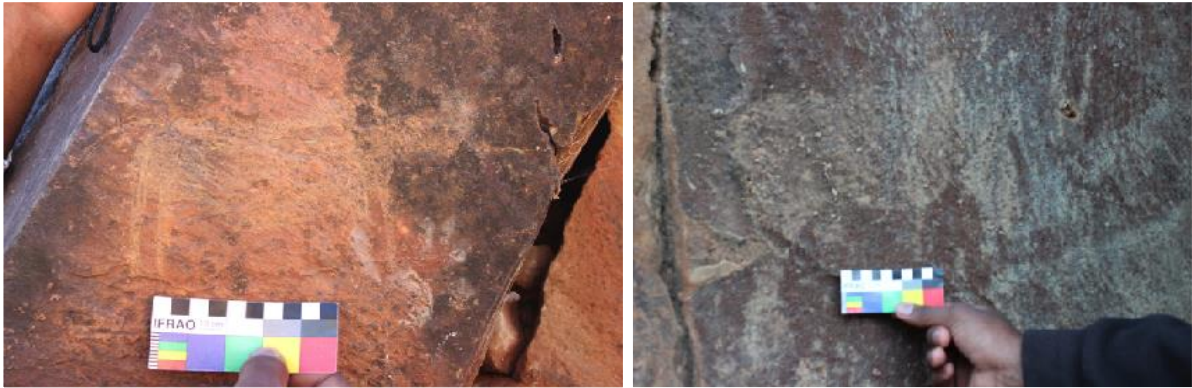


Figure 6.2014 Two rhino figures achieved through scratching technique. Left image recorded at Panel OEF61/48 while right image at OEF61/26.

Stylistically, various fine line styles in which depictions were produced exists within the site. These ranges from those that have been fully engraved, outlined and partially in filled, as well as those that have been outlined with their cortex not removed. The following Table 6.27 provides detailed summary of the variation in the method of depiction used.

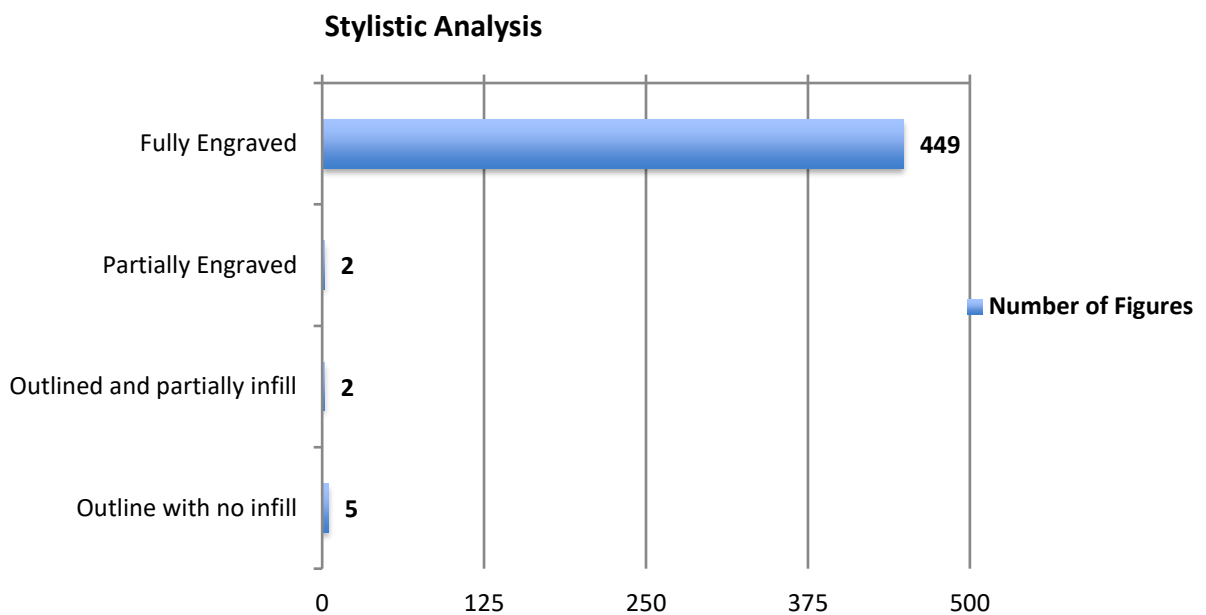


Table 6.27 Summary of the stylistic analysis of the engraved depictions of site OEF61.

The fully engraved depictions include a total of 449 individual depictions consisting mainly of all animal spoors, some few animals, abstract forms, many indeterminate forms, as well as some human depictions. Depictions under this category were fully engraved with their cortex removed (Fig. 6.205). These were followed by the depictions that have been partially engraved, which account only for 2 animal figures recorded at Panel OEF61/19 and OEF23 in the entire site (see Fig. 6.206). Here, the artists have incorporate the natural background of the

rock surface to complete the figures and, in doing so, only certain distinguishable feature of the part of the animal ‘deemed relevant’ were drawn. In this case, the figure is seen interacting with natural features in the rock surfaces.



Figure 6.205 The fully engraved artworks (animal spoor) at Panel OEF61/04. All figures at 10cm scale.



Figure 6.206 Left shows a partially engraved animal figure at panel OEF61/19. The artists appear to have incorporated the natural background of the rock surface to complete the figure, which is seen interacting with its natural features.

Depictions that have been outlined and the partially infill are also very low, with a similar record of 2 animal figures recorded at panels OEF61/37 and OEF61/27 (Fig. 6.207). Artwork in this category was outlined then lightly in-filled with either shallow/deep pecking marks. In

some cases, the natural relief of the rock surfaces was utilized to accentuate some areas of depictions. Both pecked elements are moderately defined with some being poorly defined, while depictions that were entirely outlined without infill account for 5 figures in the entire site. They comprised mainly of two human, animal and indeterminate figures recorded at panel OEF61/30, OEF61/03, OEF61/07, and OEF61/47, as shown in (Fig. 6.208). Stylistically, both techniques were used for human and animal spoors, but only the outline technique was used in animal figures and in a few human footprints.



Figure 6.207 Shows panels hosting figures that have been outlined and the partially in filled with shallow peck marks. Left image show an outline and partially in-filled giraffe figure (on its neck and head) at Panel OEF61/37. The right image show partially in-filled (head and ears) figure as at Panel OEF61/27. All figures at 10cm scale.



Figure 6.208 Shows some of the panels hosting outlined figures without in fills. Left is Panel OEF61/30 with two outlined human figures. Middle image show an outlined oval shaped figure at Panel PEF61/47, while right image show one of the outlined animal figure at panel OEF61/07

e. Superimposition

In the engraving repertoire, overlapping elements are not frequent. The only case that might qualify for superimpositions in the engraving site is that of animals over other animals recorded at Panel OEF61/39. Here, about two (or even three) animal figures – rhino, oryx and one indeterminate animal figure appear to have been superimposed on each other, while the rhino and oryx are sharing the same body but with two different heads also called ‘bicephalic’ (see Fig. 6.209 -6.211).



Figure 6.209 Left image shows the panel OEF61/39 displaying overlapping figures. Right image shows an unretouched original figure

The oryx part is clearly distinguished by its striking physical morphology: its elaborated long sharp horns (10cm), narrow, ringed and curved spine, hind and frontal legs and its thick neck and front-nasal area (the artist again used the natural feature of the rock to complete the head), while the rhino is distinguished by its long horns and the shape of its mouth. The animal's heads are opposite each other with their back adjoined together, but the rhino body serves as a “frame” for the Oryx's body and it's not clear which animal was engraved first or which of two overlapping figures precedes the other because the peck marks appears comparable in size and shape.

The depth of the peck marks of both animals appears to be patinated or weathered. The figures are positioned in the lower section of the panel –with the oryx to the left facing east – the site exit, while the rhino to the right facing west- the entrance of the site. With the landscape enquiry as a backdrop of this study, I observed that the superimposition at this

particular panel was not as a result of lack of space on the panel because the panel has enough room to host many figures. The placement is rather intentional.



Figure 6.210 Left image shows the reconstruction of Panel OEF61/39 if other animals used rhino's (black) body. This is the reconstruction of superimposition phases in the figures.



Figure 6.211-Left image shows the reconstruction of Panel OEF61/39 if other animals used the Oryx's (black) body.

f. Conservation Variables

The conservation analysis of the current condition and the potential threats affecting the rock art site in the study areas (OEF and OWF) are presented in Section A of the painting analysis, which is inclusive of the engraving site.

In relation to the current condition of the engravings, it is important to mention that all the panels in the study arc exposed to the sunlight all day. Most of the engravings were not visible at certain times of the day because we could only record the site from 11am – 15pm as the site is hosts two important springs used by game animals in the morning and late afternoon. Only one panel (OEF49) is susceptible to damage by people (or animals) walking on the artworks since it lies directly in the river course. Other anthropic actions identified in the site were the recently engraved (scratched) graffiti on panel OEF61/26 (Fig. 6.212) as well as fresh inscriptions (initials and date of visit at the site most likely by tourists (Fig. 6.213).

Therefore, a management and conservation plan for the farms' rock art is a priority case because they are already open to tourists.



Figure 6.212 Fresh graffiti in the form of scratching recorded at Panel OEF61/26.



Figure 6.213 Left image shows graffiti in form of inscriptions in the site. These graffiti's were recorded on the southern axis of the site at Panel OEF 26 and near panel OEF 30.

g. Surface Archaeological Collection

Surface archaeological analysis investigated if the engraving site was used for dwelling by means of surface archaeological artefacts in order to associate such finds with the art. However, unlike large quantities of surface archaeological collection recorded at many painting sites in the study areas, only one surface artefact in the form of a potsherd was found inside one of the boulders immediately above Panel OEF61/37 near the first spring (see Fig. 6.214). However, its direct association with the rock art cannot be firmly established. It is not

certain whether the potsherd is a collection from the same people who made the rock engravings or whether it was a later artefact which could have been added at a later stage by another group that could have used the site, especially given the fact that it is found in proximity to the spring. The absence of surface archaeological finds generally was not surprising given the fact that engravings in Namibia are usually found in open-air locations where human habitation would have not been possible since they are mostly placed on vertical surfaces with no useful open space, unlike the painting sites that offer shelter. If there were artefacts in the site, they were likely carried away by the river due to the topography of the site and the fact that it floods sometimes after heavy rains; it is possible that traces of use of the site for dwelling could have been washed away. Therefore, the absence of contextual archaeological finds in the site makes it impossible to associate surface finds with the art.



Figure 6.214 Presents the potsherd recovered immediately above the first spring in the site near Panel OEF61/37.

h. Summary of morphological Analyses

The dataset for rock engravings in the Omandumba East Farm recorded a total of 50 engraved panels containing an excess of 548 individual rock art elements. All figures were identified, counted and recorded at each panel in an effort to understand their density and diversity. The number of figures per panel ranges from a single image to a maximum number of 72 with the average number of figures per panel standing at 8.9. The highest density of figures therefore (30 – 72) figures per panel was recorded at 67%. Medium density panels (10-29 figures) were less common in the site, representing only 10%, while the lowest number of figures per panel was recorded at 23% % of the panel in the site.

The engraving in Site OEF61 comprises four categories of figures, which together represented a total of 548 individual engraved figures. The highest frequency of 80% was recorded among the zoomorphs depictions (animal spoor - that depict footprints of different animals, as well as animal figures). Figures that could not be easily determined were lumped together under the category 'indeterminate' and are the second most represented, accounting for 10% of the total elements. The indeterminate category consists of figures that completely lack definite and diagnostic features. Anthropomorphic depictions are also relatively well presented in the engraving repertoire. They comprised mainly of human footprints of various shapes, sizes, morphology and a varied number of toes that account for 7%. The least frequent, that of 3% was recorded among the abstract forms.

The abstract art is mainly dominated by abstract signs in the form of dots (very small hemispherical hollows pecked marks with extremely shallow depths), oval and some linear forms most of which have been juxtaposed with some figures. Patterns have been observed in the data that suggest that the placement of engraved artworks was not randomly done. One example is the placing of animal figures and spoor on the same panel with human footprints engravings without superimposition (juxtaposition). At most panels where human footprints were placed on the same panel with animal spoor the footprints are always placed (adjacent) to the animal spoor or animal at the same location (level) with no contact.

The techniques analysis indicates three different techniques used in the production of engravings. These are pecking (light and deep) with finer and very small and controlled pecked marks, scratching (with extremely thin lines) and polishing. Light pecked figures predominate, 90%, found at 76% of the panels in the site. These were followed by figures that

have been produced through scratching technique, accounting for 5% and found at 10% of the panels in the site, while those that have been deeply pecked account for 4% of figures, registered at 8% of the panels. The least used technique was recorded among the figures (1%) that have been produced through pecking and polishing found at 6% of the panels in the entire site. The stylistic analysis indicated that 449 artworks have been fully engraved, predominantly animal spoors, a few animals, abstract forms, many indeterminate forms, as well as some human depictions. These were followed by the artworks that have been outlined without in filled, accounting for (5) depictions observed among the few human footprints, some abstract figures and only animal figures. Depictions that have been partially engraved and those that have been outlined first and then partially engraved account for (4) figures in the site.

Superimposition is less frequent in site, appearing only at one panel (OEF61/39) where an oryx, rhino and one indeterminate animal appeared in a bicephalic scene. The placement was intentional at this specific panel because the panel offers enough room to accommodate other figures. The animals also appear to be sharing the same body (oryx and rhino). There are many cases in the site where many figures found on the same panel co-exist with other figures, yet they have not been superimposed on each other; instead they are simply adjacent to each other without contact on the same panel.

With regards to surface archaeological collections, only one surface artefact in form of a potsherd was found inside one of the boulder above Panel OEF61/37 near the first spring. However, such a find could not be dated by associated with the rock art since it is not established whether such artefact is from the original authors or from the modern period added at a later stage by another group that could have used the site. The site setting, however, suggests that it could have been unsuitable for human habitation since it does not offer any form of shelter for people.



6.3. SECTION C: PIGMENT ANALYSES

Section C presents the results of the pigment analysis carried from three different contexts. The objectives of the analyses were carried out to answer research questions about the origin and provenience of the coloured materials used in the production of rock paintings and about their chronological context. The geographic origin of the coloured materials was investigated through establishing the chemical and mineralogical compositions of the pigments. The potentiality for direct dating was assessed also through the characterization of the nature of the pigment. Should they contain organic materials, such possibility provides avenue for direct carbon dating.

6.3.1. Significance of pigment analyses in the study

In order to complete archaeological contextual information of the rock art sites in our study, various samples of possible coloured materials used to produce pigments were extracted from three different contexts described in Chapter 5, on which numerous analytical methods were performed in characterising pigments. This was crucial in to provide detailed information on the origin of the materials used in the production of paintings within our study areas.

These techniques include: microscopic and macroscopic observations, the Infrared Spectroscopy Fourier transform (FTIR) for the analysis of the chemical bonds present in the various samples and X-ray fluorescence spectrometry for the analysis of the chemical elements present in the materials. These analyses were carried out in different laboratories in Paris namely: the Molecular and Structural Archaeology Laboratory (LAMS - UMR 8220) for the X-ray fluorescence (XRF) and the DRX for noninvasively on non-prepared samples and the Museum National d'Histoire Naturelle for XRD and FTIR. The results of those recovered from Leopard Cave or site OWF42 as well as geological stones collected in Brandberg and Burnt Mountains have been studied and analyzed by a Master's student, Océane Lapauze (LAPAUZE 2016) in the laboratory Histoire Naturelle de l'Homme Préhistorique (HNHP – UMR 7194) at the Musée de l'Homme département of the Muséum National d'Histoire Naturelle of Paris.

In addition, *in situ* X-Ray Fluorescence analyses were also performed at 8 paintings sites in Erongo Mountains under the direction of Matthieu Lebon and Guilhem Mauran (MAURAN 2016) from the Musée de l'Homme département of the Muséum National d'Histoire Naturelle of Paris. Of the 8 analysed sites, six of these are from Omandumba Farm; one site is from farm Ai Aiba/Anibib opposite Omandumba while the other one site is from Tubusis farm, south west of Omandumba. The sites were selected as a result of their diversity of colours they present. Of the particular interest were figures painted in black, red and white. Other interests were drawn based on the archaeological significance of the sites in the region. The results of these analyses consequently provided a broad overview of the paintings' diversity in the study. Below are the results.

6.3.2.Results

a.Macroscopic and microscopic observations

The following macroscopic and microscopic observations were made on the archaeological coloured materials recovered from the stratigraphic squares (P7, O7, P8 and O8) of Leopard Cave excavated during the 2015 archaeological mission (Fig. 6.215). These were categorized into 13 groups based on their visual texture and visible mineralogy with only minor consideration of their colours, as it could result from their alteration.

However, coloured materials that could not be linked to any other major group were lumped in a specific group (group 8). Among this group, one piece in particular presented some very specific features as one of its faces was processed, probably to produce a coloured powder that could have been used as a pigment (Fig. 6.216). Other archaeological materials with no specific characteristic or any colouring ability were lumped into an indeterminate group. All the results of the analysis are discussed in details in master thesis of Océane Lapauze, (LAPAUZE 2016).

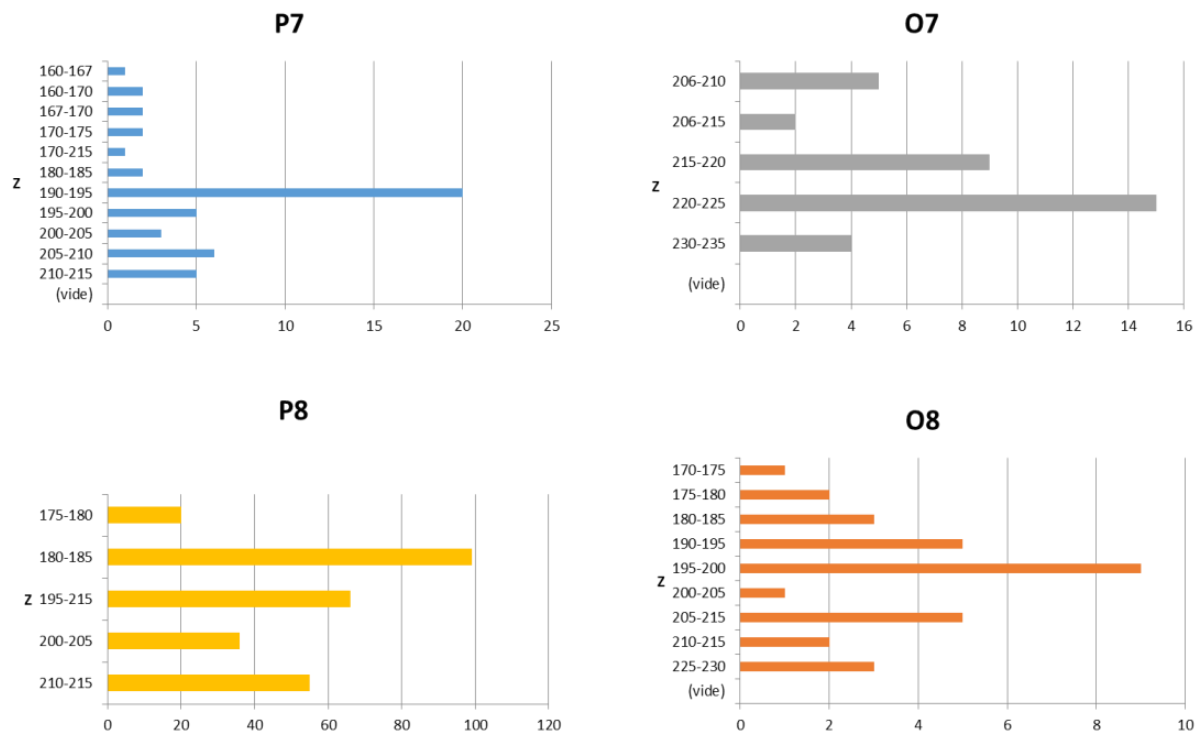


Figure 6.215 Shows the stratigraphic distribution of the number of archaeological pieces excavated in the 4 squares 2015, (credits: PLEURDEAU 2016:33).

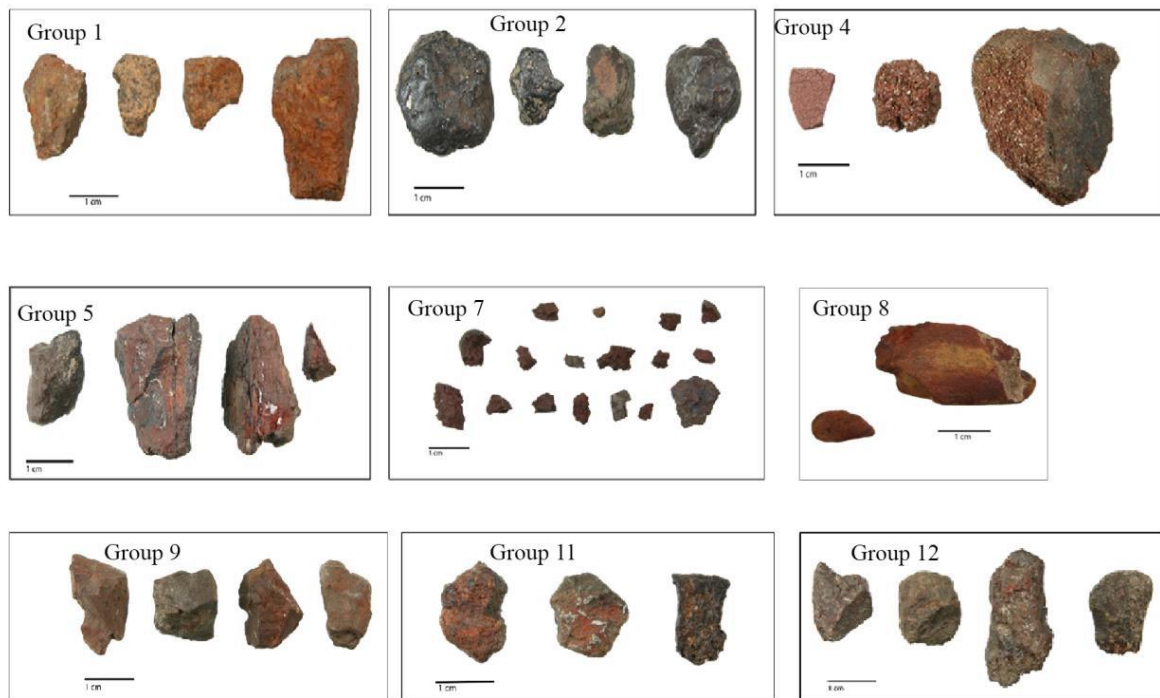


Figure 6.216 presents various groups of coloured material excavated at Leopard Cave site. Photo credits: LAPAUZE 2016: 56-61).

- Group 1 elements are characterised by brick-orange colour (Fig. 6.216). They are porous in nature and composed of coarse-grained particles visible to the naked eye. Quartz and mica-like's crystals are observable as inclusions into the coarse-grained matrix. The cutting of the sample P7 234 showed that the black inclusions present in the surface of the samples correspond to the rock with no oxidation. These samples appear to be derived from detritus sedimentary rocks or of volcanic dyke.
- Group 2 samples are black to very dark color whose surface is smooth and shiny with metal aspect. Their particles are not physically visible on the surface due to its hardness. Few types of quartz have been observed in some samples. The elements present in this group appear to be related an accumulation of iron oxides, which is very rich in hematite's –iron oxide – (more than 50%), found in soils of Southern Africa (DAYET 2012) and along the chain Damara (BREITKOPF1988) in Namibia.
- Group 4 elements are few but of peculiar texture. They have friable appearance with fine grains' size. The silty clay composing the large part of their matrix host inclusions of numerous micas and little quartz.
- Group 5 samples have a foliated structure with on certain parts alternation of black and red colours. Mineralogically, only a few crystals of quartz and micas have been observed

in these samples. This group is the most important in terms of the number of samples, however its strong alteration makes it very difficult to describe.

- Group 7 samples form part of small purplish spheres with a smooth appearance. Numerous micas flakes are present in a fine-grained matrix. The color of these samples is a one of their specific characteristic, as it was not seen in any other groups.
- Group 9: The granulometry of elements in this group is very fine with very few minerals in inclusions (only a few micas). The alteration surface colour is orange rust.
- Group 8: This set brings together the elements with colouring abilities with or without traces' process. The elements of this group are not comparable to any group in particular hence, they will only be considered at a later stage of the analysis. However, within this group, one particular sample stands out, sample O8b Z=206-215 (Fig. 6.216 Group 8), containing evidence of surface use by men. The sample consists of a central area of color yellow coated with a layer of red color. The two parts are identical in all respects (texture and the particle size), with differences observed only in terms of rock color.
- Group 11 samples have shades of red and black. They have coarse particle size and present some quartz minerals with irregular surfaces.
- Group 12 rocks are very dark and have an irregular surface, coated with little small inclusive quartz. The structure of these samples resembles that of volcanic bombs.

b. Fourier Transforms Infrared Spectroscopy (FTIR) results

Group	Samples No.	Colour	FTIR results
Archaeological Context: Leopard cave			
Group 1	P7 234	Orange	Anorthite
Group 2	O8a t5 (Z=225-230)	Black /Dark	Haematite + Quartz
Group 4	P7c t7 (Z=215-220)	Red/White	Quartz + Microcline + Micas
	P7 135	Red	Quartz + Micas + Feldspar + Anorthite
Group 5	O8a t4 (Z=195-200)	Black /Red	Haematite + Quartz + Albite
Group 7	P7b Z=195-200	Purplish	Haematite + Quartz
	P7c t8 (Z=190-195)	Purplish	Haematite + Quartz + Kaolinite
Group 11	P7c t3 (Z=205-210)	Black /Red	Haematite + Quartz + Goethite
Group 12	O7b t1 (Z=230-235)	Black	Haematite + Quartz
Geological Context			
Burnt M /Cr	1	Red	Haematite + Quartz + Feldspar + Kaolinite
Burnt M /Cr	2	Unknown	Haematite + Quartz + Feldspar + Kaolinite
Brandberg	1	Mica/Quartzite	Mica + Quartz + Kaolinite
Brandberg	2	Mica/Quartzite	Mica + Quartz
Brandberg	3	Red	Haematite + Quartz + Kaolinite
Painting Sites: Surface Collection			
Erongo: Site OWF56 (EW)	1	Red	Haematite + Quartz + Kaolinite
Geological Sample X3		Quartzite	Haematite + Quartz + Kaolinite
Erongo: Site OWF39 (FT)	1	Red	Haematite + Goethite + Kaolinite
			Lepidocrocite + Montmorillonite

Table 6.28 Mineral composition present in the samples through Fourier Transforms Infrared spectroscopy (FTIR) analysis

The FTIR treatment results (Table 6.28) highlights various mineral phases present in the samples. The majority of the archaeological and geological rock samples contains fractions of hematite. The presence of goethite and lepidocrocite, which are also form of iron oxides, within the matrix in respectively two and one element is of higher interest. The lepidocrocite is only present in a single geological sample (Site OWF56) for which FTIR identified both hematite and goethite phases. Goethite is present in another sample, one archaeological sample of Group 11 (p7c t3). Quartz on the other hand is only absent in two samples of the 17 analyzed. This mineral phase is easily recognizable as a result of its characteristic peak's duplication at 796 cm-1 and 777 cm-1.

Moreover, almost half of the sample contains clays, however, the FTIR treatment identification method does not go beyond the kaolinite family. Indeed, kaolinite and montmorillonite clays have common peaks. Therefore, although it is possible to observe the montmorillonite when it is not in the presence of other clays of this family thanks to its peak at 3620 cm-1, it is difficult to decide on its presence when it is mixed with other clays of the kaolinite family. Kaolinite and other mineral phases conceal the peaks of the montmorillonite

that could allow easier identification. Other minerals such as micas, alkaline and potassic feldspar are also present in few samples. Some feldspars were detected on the mineral scale, however according to the phases present in the sample, identification of the feldspars failed. The same problem arises for micas elements, which it has not been possible to discriminate between biotite and muscovite. To remedy this, we compared the results obtained with those derived from the DRX on powders.

c. X-ray Powder Diffraction (XRD) results

Group	Samples No.	Colour	XRD results
Archaeological Context: Leopard cave			
Group 1	O8b Z=205-215	Orange	Haematite + Quartz+ Micas+ Feldspars+ Illite
	O8 14	Orange	Haematite + Quartz+ Feldspars
	P7 234	Quartzite	Micas+ Feldspars+ Amphibole
Group 2	O8a t5 (Z=225-230)	Black	Haematite + Quartz
Group 4	P7c t7 (Z=215-220)	Mica/Quartzite	Quartz +Micas + Feldspars
	P7 135	Mica + Quartzite	Micas + Feldspar + Sepiolite
Group 5	O8b Z=205-215	Black /Red	Haematite + Quartz + Feldspars + Amphibole
	O8a t4 (Z=195-200)	Black /Red	Haematite + Quartz + Feldspars
Group 7	P7b Z=195-200	Purplish	Haematite + Magnetite +Quartz
	P7c t8 (Z=190-195)	Purplish	Haematite + Quartz+Micas+ Dickite
Group 9	O7a Z=215-220	Orange	Haematite +Quartz+Micas+ Illite
Group 11	P7c t3 (Z=205-210)	Black /Red	Haematite + Quartz +Goethite+Micas+Feldspar
Group 12	O8a Z=195-200	Black	Feldspar + Quartz
	P7c Z=190-195	Black	Haematite+ Quartz +Feldspars+ Illite
	O7b t1 (Z=230-235)	Black	Haematite + Quartz+Micas+ Illite
Group 13	O7c Z=230-235	Dark/Grey	Haematite+ Illite+ Anatase
Geological Context			
Burnt M (Cr)	1	Red	Haematite + Quartz + Feldspar + Kaolinite
Burnt M (Cr)	2	Unknown	Haematite + Quartz + Feldspar + Kaolinite
Brandberg	1	Mica/Quartzite	Mica + Quartzite + Kaolinite + Talc + Dickite
Brandberg	2	Mica/Quartzite	Mica + Quartzite +Kaolinite+ Norsethite
Brandberg	3	Red	Haematite+Quartz + Kaolinite+ Rutile
Painting Sites: Surface Collection			
Erongo: Site OWF56 (EW)	1	Red	Haematite+Quartz+ Kaolinite+ Dickite
Geological Sample X3		Quartzite	Haematite+Quartz+ Dickite
Erongo: Site OWF39 (FT)	1	Red	Haematite+ Lepidocrocite+ Kaolinite+
			Montmorillonite + Goethite

Table 6.29 The results obtained through X-ray Powder Diffraction (XRD) analysis.

The X-ray Powder Diffraction (XRD) results (Table 6.29) established various mineral phases, which were not detected with the FTIR analysis. The results confirmed hematite, an iron oxide, to be the predominant phase in the various samples. As hematite is the stable iron oxide phase, its predominance in the distinct samples is therefore coherent. However, it is

associated with magnetite in a sample of the Group 7, (p7b Z=195 - 200), to goethite in two and to lepidocrocite in one. Goethite was spotted in namely the Archaeological Survey of Group 11 (p7c t3) and the geological (Site OWF56). This last sample was also the only one bearing some lepidocrocite. Hematite, goethite and lepidocrocite are three distinct iron-oxides phases largely known for their colouring strength. They correspond to various alterations' states of iron core, and are all naturally found in association from one to another. The results also indicates a single archaeological sample: group 7, p7b Z=195 - 200 to contain magnetite, which in addition to others is also an important iron oxide mineral. Among the most common mineral phases, three are of interest since XRD allowed more precision in their identification than what had been done thanks to FTIR analyses: clays, feldspars and micas. Muscovite, the most common white potassic mica, largely predominates in the samples analysed, only one sample appeared to bear some biotite, common dark potassic mica.

As for the feldspars, XRD experiments lead to the detection and identification of microcline potassic alkaline feldspar –, Anorthite – a group of plagioclase feldspars rich in calcium – and albite – a group of plagioclase feldspars rich in sodium. Identification of Anorthite and albite can help differentiate rocks and understand some of their geological history. However, for three samples it was not possible to proceed to the identification of the feldspar to higher level than their family: alkaline, calcic or potassic. Hornblende is present in a single sample of the Group 1, P7 234, whose mineralogical nature suggests a volcanic rock. As a matter of fact, hornblende mineral is part of the amphiboles' family, common in the magmatic rocks such as granites. In addition, it is also originated from the constitutive granite of the massif of the Erongo.

As for the clay fractions, the X-ray Powder Diffraction (XRD) analysis has helped to detect the presence of dickite in 4 samples, occasionally manifested alongside with kaolinite, which belong to the same kaolinites family. Sepiolite particular clay – is only found in one sample. Within the samples, quartz is only absent from only three of them. It is the most predominant and consistent mineral, in addition to Haematite present in the majority of the samples. Quartz is however not the most discriminant mineral considered in the framework of a study of provenance given that it enters in the composition of most of the rocks. Talc minerals were only detected in one of geological sample at Brandberg 1. Three samples of this deposit have been analyzed and only one manifested such element. The norséthite composition is another element registered single in the sample from the same deposit of Brandberg 2. This mineral is

a barium carbonate and belongs to the group of the dolomite. It is considered rare in the rocks but may be present in metamorphic context (MROSE et al., 1961). The rutile element is also present in the sample of Brandberg 3 and is a titanium dioxide, which can either, be found as rutile or anatase.

1.X-ray Fluorescence (XRF) results

Echantillons		Si	P	S	Cl	K	Ca	Ti	V	Cr	Mn	Fe	Ba	Total
Groupe 1	P7 104	20,00%	-	0,20%	0,60%	0,25%	0,28%	0,14%	-	0,09%	0,32%	26,00%	0,02%	47,90%
	P7 234	54,00%	0,22%	0,13%	0,46%	2,20%	13,00%	2,90%	-	0,11%	0,95%	44,00%	0,22%	118,19%
	O8 14	76,00%	0,84%	0,55%	0,61%	6,19%	4,33%	0,53%	0,03%	0,01%	0,95%	39,00%	0,26%	129,30%
	O8b Z=205-215	61,00%	0,55%	0,27%	1,12%	6,61%	2,68%	2,97%	0,12%	0,21%	0,48%	29,00%	0,26%	105,27%
Groupe 2	O8 15	13,00%	-	0,01%	0,08%	1,00%	4,00%	0,43%	-	0,03%	0,11%	45,00%	0,04%	63,70%
	O7a Z=215-220	96,00%	0,04%	0,11%	0,21%	6,64%	0,29%	1,44%	0,02%	0,01%	0,18%	17,00%	0,25%	122,19%
	P8a Z=210-215	12,00%	0,84%	0,20%	0,16%	0,50%	0,71%	0,13%	0,01%	0,04%	0,07%	81,00%	0,06%	95,72%
Groupe 4	P7 135	45,00%	-	0,13%	0,44%	9,60%	6,40%	1,12%	-	0,03%	0,12%	13,00%	0,12%	75,96%
Groupe 5	O7a Z=220-225	12,00%	-	0,01%	0,08%	1,00%	2,00%	0,03%	-	0,01%	0,01%	58,00%	0,01%	73,14%
	P7 82	68,00%	-	0,07%	0,04%	1,56%	1,71%	0,92%	-	0,06%	0,08%	14,00%	0,11%	86,55%
	P7 333	38,00%	0,43%	0,03%	0,48%	0,39%	0,28%	0,16%	0,01%	0,05%	0,12%	93,00%	0,01%	132,96%
	O8b Z=205-215	12,00%	1,12%	0,49%	0,45%	1,56%	0,67%	0,36%	0,03%	0,05%	0,14%	86,00%	0,04%	102,91%
	O8b Z=205-215 (2)	111,00%	0,24%	0,23%	0,51%	16,00%	1,40%	2,36%	0,03%	0,01%	0,20%	18,00%	0,57%	150,55%
Groupe 7	O7d Z=206-210	109,00%	-	1,86%	1,12%	3,73%	24,00%	0,53%	-	0,01%	0,25%	13,00%	0,04%	153,54%
	P7c t8	23,00%	0,96%	0,31%	0,61%	1,44%	2,65%	0,15%	0,02%	0,02%	0,16%	58,00%	0,06%	87,38%
Groupe 9	O7a Z=215-220	79,00%	0,52%	0,20%	1,53%	12,00%	2,85%	3,10%	-	0,01%	0,26%	27,00%	0,58%	127,05%
Groupe 11	P7c Z=200-205	6,00%	0,34%	0,19%	0,62%	1,84%	0,57%	0,28%	-	0,06%	0,12%	70,00%	0,03%	80,05%
	P7c t3	67,00%	0,06%	0,13%	0,54%	0,82%	26,00%	0,12%	0,01%	0,02%	0,52%	39,00%	0,02%	134,24%
Groupe 12	O8a Z=195-200	93,00%	-	4,41%	0,20%	19,00%	6,22%	0,16%	-	0,00%	0,72%	12,00%	0,18%	135,89%
	P7c Z=190-195	131,00%	0,50%	0,02%	0,55%	10,00%	0,73%	0,41%	0,02%	0,01%	0,12%	20,00%	0,13%	163,49%
Groupe 13	O7a	113,00%	0,45%	0,27%	0,16%	1,19%	0,65%	0,51%	0,03%	0,01%	0,06%	17,00%	0,02%	133,35%
	O7c Z=230-235	57,00%	0,22%	0,04%	1,07%	5,31%	1,53%	6,84%	0,17%	0,05%	0,25%	56,00%	0,28%	128,76%
Éléments Importants	O8b Z=205-215 (Point Jaune)	39,00%	0,01%	0,01%	0,53%	2,68%	1,23%	1,62%	0,07%	0,02%	0,04%	25,00%	0,17%	70,38%
	O8b Z=205-215 (Point Rouge)	14,00%	0,31%	0,27%	0,68%	0,72%	0,82%	1,10%	0,09%	0,04%	0,05%	57,00%	0,12%	75,20%
Géologiques	Brandberg 1	65,00%	0,30%	0,02%	0,07%	0,73%	0,25%	2,50%	-	0,04%	0,01%	21,00%	0,26%	90,18%
	Brandberg 2	75,00%	0,28%	0,06%	0,12%	2,93%	1,65%	2,10%	-	0,04%	0,06%	14,00%	0,37%	96,61%
	Brandberg 3	43,00%	1,02%	0,11%	0,09%	0,23%	0,92%	1,00%	-	0,05%	0,07%	61,00%	0,12%	107,61%
	Site OWF56 (EW)	6,75%	0,77%	0,30%	0,37%	0,15%	3,09%	0,07%	0,01%	0,01%	1,69%	64,00%	0,89%	78,10%
	Site OWF39 (FT)	11,00%	0,88%	0,47%	0,15%	0,07%	0,37%	0,13%	0,01%	0,03%	2,57%	80,00%	0,06%	95,74%
	X3	5,37%	0,63%	0,29%	0,22%	0,16%	0,21%	0,17%	-	0,03%	0,25%	73,00%	0,68%	81,01%
	Burnt Mountain 1	8,20%	0,87%	0,38%	0,56%	0,19%	0,79%	0,21%	-	0,05%	1,45%	92,00%	0,01%	104,71%
Burnt Mountain 2	46,00%	0,28%	0,34%	0,22%	0,77%	0,73%	1,16%	0,04%	0,04%	0,20%	47,00%	0,34%	97,12%	

Table 6.30 The results of X-ray Florescence (XRF), after (O. LAPAUZE

The XRF results reflected in (Table 6.30) above indicate the prevalence of silicon in every sample, with sometimes-incompatible rates (> 100%). Similarly, iron is also a major element with substantial amounts in most of samples analyzed. Their occurrence according to LAPAUZE (2016) is consistent with the presence of quartz and iron oxides mineral phases. She further stressed that the XRF results mainly used to discriminate some mineral phases in DRX analysis based on the elements contained in the samples, whilst considering the relativity of the results. This concerns especially the analysis of 8 elements namely the: phosphorus, sulphur, chlorine, potassium, calcium, titanium and manganese.

e. In situ analyses preliminary results: nature of the pigments used

According to Guilhem Mauran (MAURAN 2016), the analyses performed at various painting sites revealed existence corresponding trends with minor variances. These came as a result of sites' substrates variation. There is a need for further quantitative treatments of the spectra collected to understand the variations. The following paragraphs sum up the general trends that seemed to appear from the *in situ* measurements. Only in some minor cases, due to very specific features, are the sites namely distinguished. The analyses performed on the black paintings at Black Gnu Wall site revealed the absence of manganese (Mn) in the pigments' layers. Consequently, the black used were not manganese oxides or hydroxyl-oxides. In most cases, the spectra did not show any differences between the spectra collected from the black layer's analysis and from the substrate, (Fig. 6.217) characteristic of charcoal based paintings at the Black Gnu Wall/OWF2016.

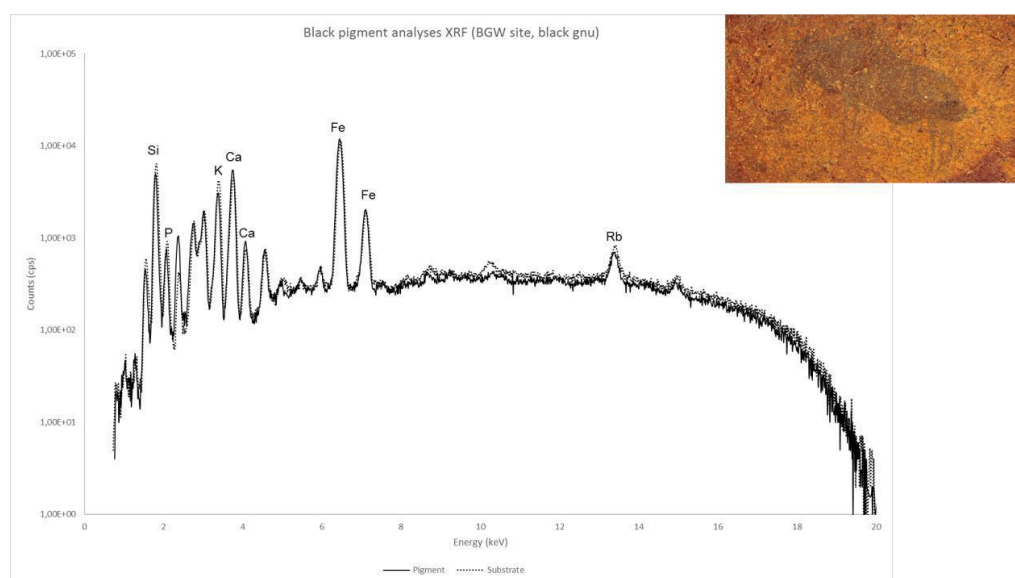


Figure 6.217 Analysis of the black pigments used to realize the black gnu figure of BGW site, made of charcoal. In the upper right corner: colour-enhanced picture of the gnu representation. (After, MAURAN 2016:13).

The black paintings of the Elephant Wall/site OWF56 site showed peculiar features. The intensity of the iron peaks was higher from the pictorial layer than from the substrate, (Fig. 6.218). Both two black figures (elands) analysed in this site were performed after a red elephant figure, it might be due to iron traces spread over the substrate by water leaking. Raman analyses performed on samples collected in 2015, revealed the presence of both hematite and carbon, sustaining the previous hypothesis or the use of a mixture of the two as a blackish pigment. Micro-observations would provide more indications on the mixture of the carbon and haematite phases, allowing differentiation between the two previous hypotheses.

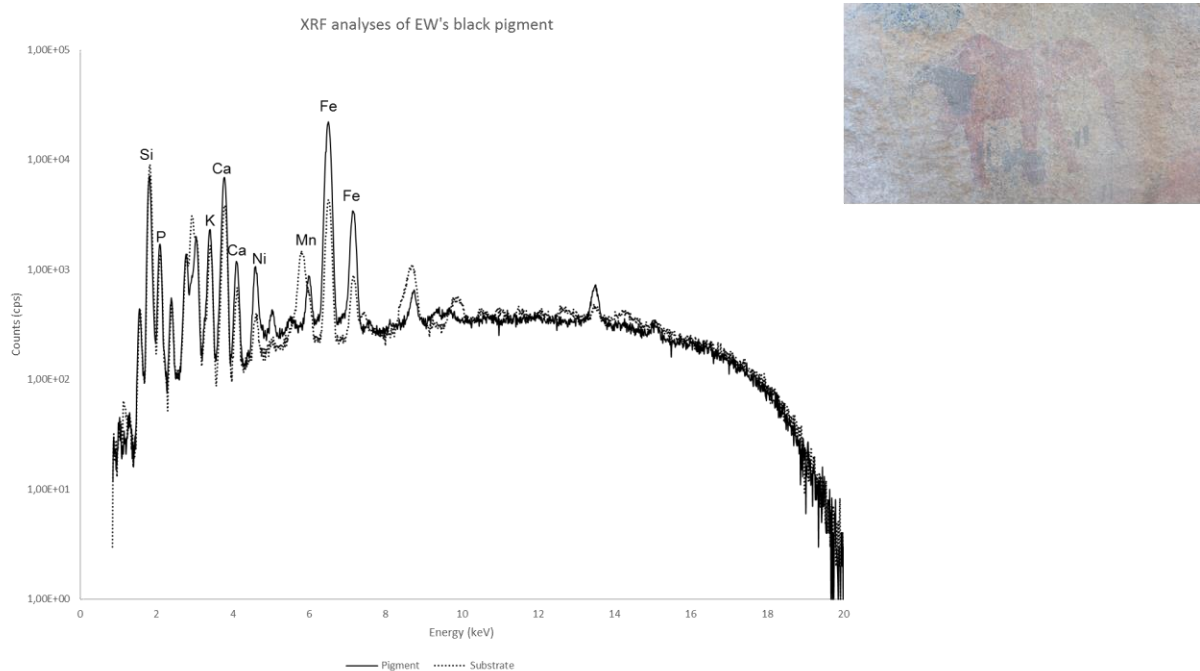


Figure 6.218 Analysis of the black pigments used to realize the equids figures, containing charcoal and hematite. In the upper right corner: the area of the two black equids and the red elephant, (after, MAURAN 2016:14).

Among the very specific features of the Ghost Cave/site OEF60 was the presence of dark brown figures, appearing almost black at first glimpse. The XRF analyses presented few differences with the substrate's spectrum, (Fig. 6.216), with predominantly higher amount of iron in the pictorial layer. Although great care was exercised to analyse an area clear of any other pigment, as it can be seen in (Fig. 6.219), the anthropomorphic has been covered by a red figure. Therefore, it is thought that the spectrum collected also presented some of the element of the later red pigment, despite the care of only analysing the dark hue. As the hue of the dark representation is not black though rather dark brown, it is believed that the pigment used might have incorporated some scarce amount of iron oxide together with charcoal or soot. Further analyses should confirm this last hypothesis.

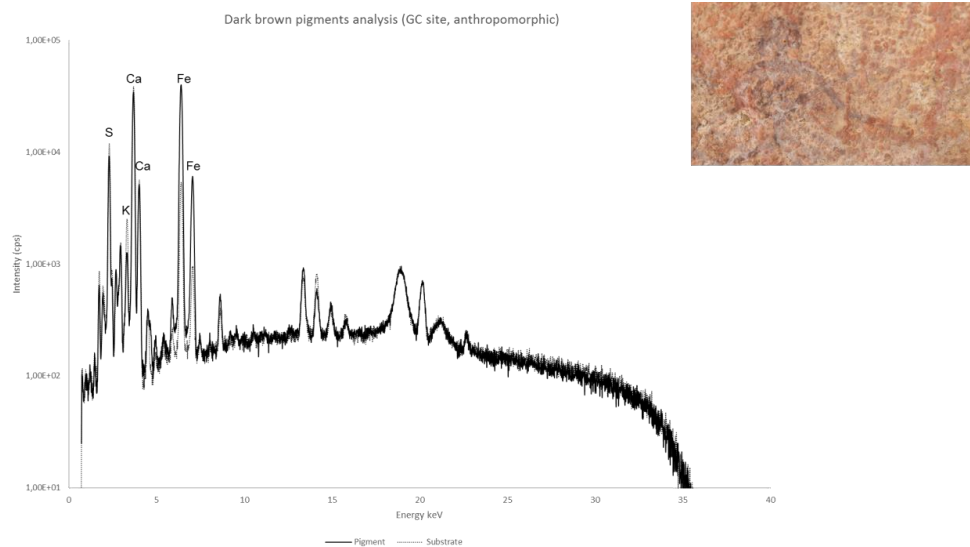


Figure 6.219 Analysis of the dark brown anthropomorphic representation of Ghost Cave site, made of charcoal and iron oxide. In the upper right corner: close view of the dark brown anthropomorphic figure, (after, MAURAN 2016:15).

White pigments were also analysed on the ostrich figure at the site. In addition to this figure's analysis, white alteration that developed around the figure was also analysed. The qualitative analyses performed on the site showed minor distinctions between the alteration and pigment's layers, (Fig. 6.220). Consequently, the analyses did not lead to proper identification of the pigment composing the pictorial layer. Instead, it provided evidence of a structure made of the superposition of a wall alteration and a pigment layer. The superposed layers contain a calcium carbonate, e.g. eggshell (CaCO_3), a calcium sulphate, e.g. gypsum (CaSO_4), and possibly a calcium phosphate, e.g. apatite ($\text{Ca}_5(\text{PO}_4)_3(\text{OH},\text{Cl},\text{F})$). Further Infrared analyses of micro samples will confirm this theory.

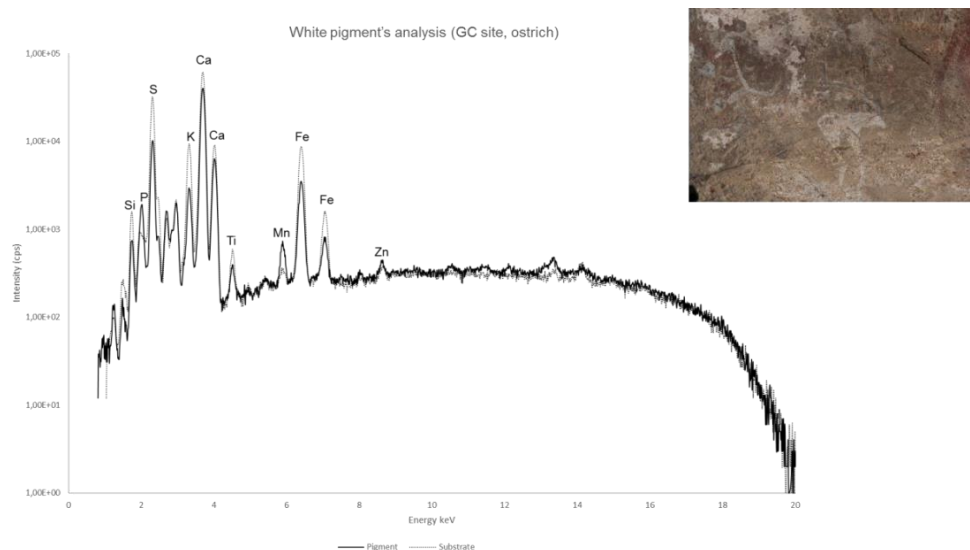


Figure 6.220 XRF in situ results of the white pigments and alteration of site OEF60. In the upper right corner: close view of the ostrich figure from which the white pigment spectrum was collected. (After, MAURAN 2016).

As for the reds pigments analysed at site Elephant Wall, Leopard Cave, Fackelträger shelter and at Ghost Cave contained iron corresponding to iron oxide based pigments. The various amounts of silicon, aluminium and potassium detected could also be characteristic of clays. To confirm this hypothesis, further treatments of the spectra collected are required to proceed to a full quantitative analysis.

Of a particular interest from the preliminary results of the *in situ* experiments is the fact that darker hues of red corresponded to higher amounts of iron, (Fig. 6.221). This could be either due a difference of thickness of the pictorial layers or to the composition of the pigments used containing already initially various amounts of iron. The thickness of the pigments layer is of crucial importance when carrying out *in situ* analyses. This is because most paintings in Omandumba has only thin pictorial layer which prevents the *in situ* analyses from being effective. Such analyses lead to analysing multiple testing of the pictorial layer and the substrate. Therefore, characterization and identification of the pigments requires more treatment of the spectra collected and further analyses to confirm their identification.

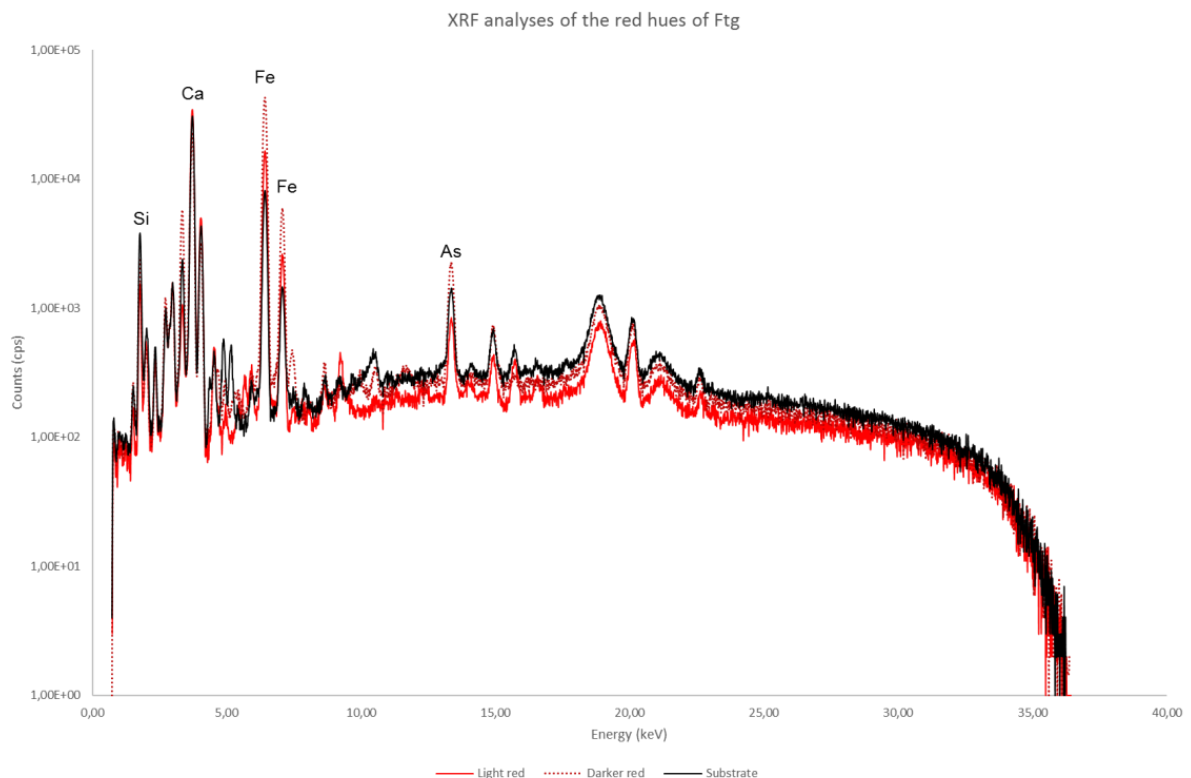


Figure 6.221 the result of two distinct red hues at Fackelträger shelter/ site OWF39b, (after, MAURAN 2016:17).

f. Discussions of the pigment analysis results

f.1. Advantages and limitations of the different techniques used

Different microscopy techniques used in analyses have many benefits and some limitations, hence the need to carry out measurements with different methods on the same samples in order to make comparisons and valid interpretations. The use of XRD analysis for example, is non-invasive and allowed direct analyses on the untreated blocks (samples). Samples from Leopard Cave pigmented blocks had irregular surfaces, due to their coarse-grained granulometry, making the μ -XRD difficult to analyse. This is why, in addition to those already analyzed by DRX (geological and some archaeological), they were powdered and then analyzed to compare the results obtained by other two methods (FTIR and XRF) analyses. The archaeological samples (Group 1, Group 4 and Group 5) whose mineral phases could not be determined were uncertain on the Diffractogram through the μ -XRD analysis. This is because the μ -XRD flat imaging did not provide well-defined rings. In a normal circumstance, the results are supposed to provide clear uniform rings, as the samples analysed presented a large heterogeneity coupled with direction issue of the mineral phases of each sample, the imaging plates presented heterogeneous and discontinuous rings. The prime example of such results' bias has been observed among the samples from Group 12: O8a Z = 195-200 (Fig. 6.222) below.

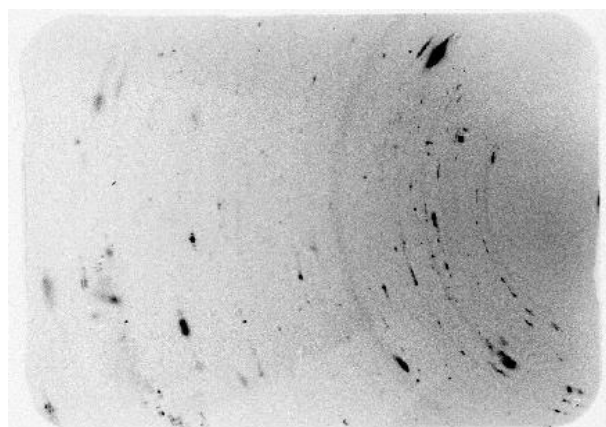


Figure 6.222 Imaging plate of the sample Group 12 O8a Z = 195-200. (After, LAPAUZE 2016:70)

The Diffractogram obtained from this sample were not exploitable to determine their mineral phase, due to its coarse-grained irregular surface and its nature. The Fit2D software converting the imaging plate into a spectrum uses the pixels' concentration on a ring to produce the position and intensity of a diffraction peak. The higher the concentration, the higher intense the peak is. And if these peaks do not have well-defined rings, the results can

be misinterpreted or inconclusive. The imaging plate above was generated from the second phase of samples from the X-ray Diffractometry. The diffraction hence did not give well-defined rings. They simply formed a dense and broad points distributed along the rings and which cover part of the adjacent ones. According to the Fit2D software used, the positions of grey to dark shades indicates the low intensity of the peaks which is below the concentration of the pixels required on the ring hence resulting in the bias results of the peak intensity as presented in the Diffractogram (Fig. 6.223).

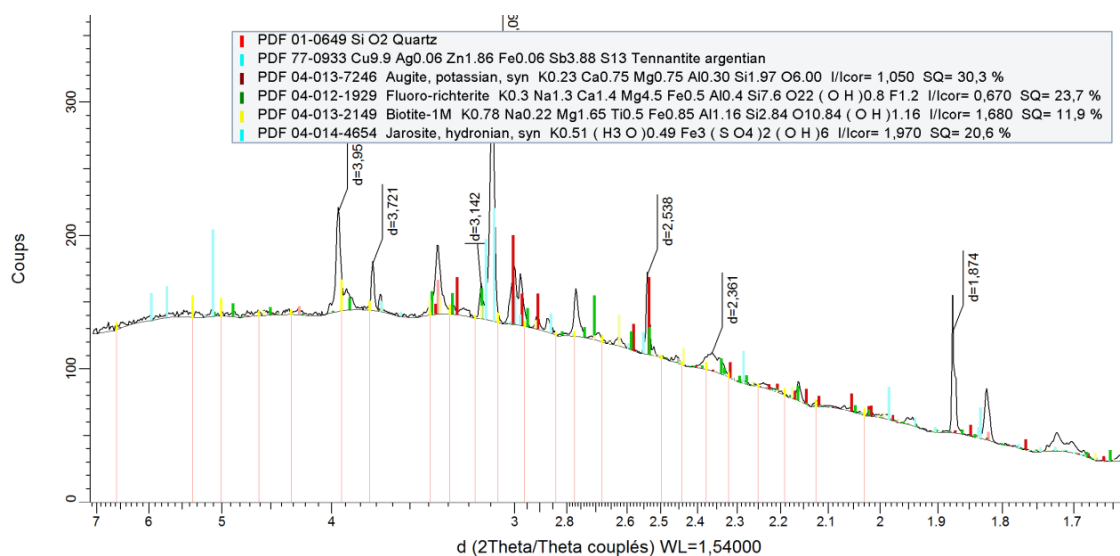


Figure 6.223 Diffractogram obtained under of Fit2D, (after, LAPAUZE 2016:71).

In addition to the results presented in the Diffractogram above, the same samples were powdered. It generated desirable intensity and the mineral phases were identifiable in final Diffractogram (Fig. 6.224).

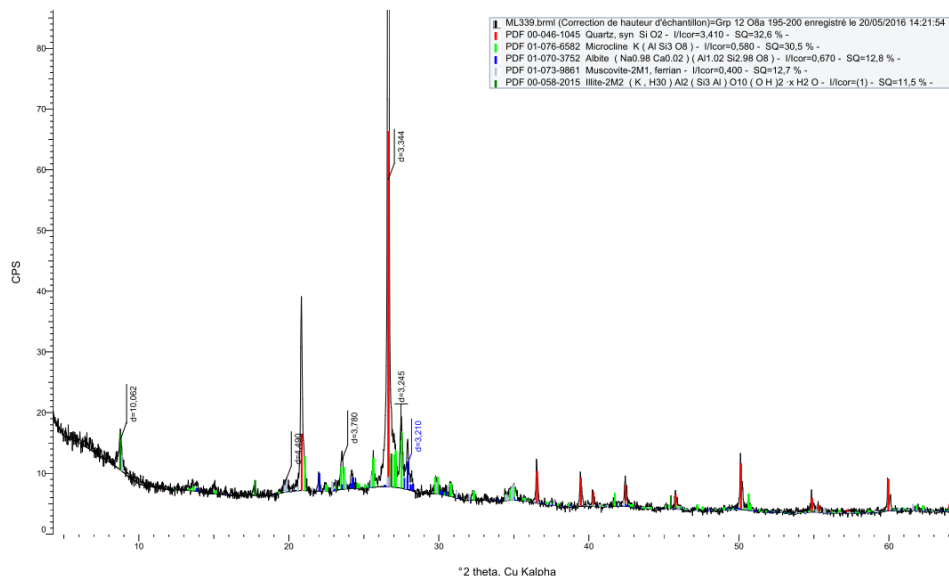


Figure 6.224 Diffractogramme on powders of the sample group 12 O8a Z = 195-200 (after, LAPAUZE 2016:71).

The peaks intensity generated from the powder Diffractogram (Fig. 6.224) are well defined hence, the powder method was more suitable for the samples as the samples have irregular surface. Reducing the samples to powders permitted to get rid of the issue of the diffraction on non-regular surfaces, providing more relevant results. The results also indicated a large predominance of hematite as iron oxide contained in the samples.

In addition to thatin-group 12, most of the samples (archaeological and geological from Erongo) constitute haematite as revealed from the XRF analyses. The microscopic analyses generated from FTIR and XRD studies were most beneficial, as they have provided valuable mineralogical compositions of the samples in the study. However, this was only achieved by reducing samples to powder, which implies partial destruction. The main disadvantage of these methods is that they are invasive. However, the powders were recovered and re-used for other analyses.

f.2.Archaeological considerations: Provenience

The geological samples in the study indicated that the majority of rocks possess haematite. However, only two samples from the same geological deposit of Brandberg did not contain them. For the other iron oxides, only lepidocrocite and goethite are present as well as sample from Site OWF39/ Fackelträger Shelter, which comes from a surface find of the shelter in Erongo Mountain. It is important to note that goethite is only present in Group 11 archaeological samples: P7c t3. Although all geological samples from Brandberg, Burnt Mountain near Twyfelfontein as well as those from Erongo Mountains contains hematite, the mineralogical composition of this compound present significant heterogeneity. This permits an efficient discrimination between the different potential coloured materials' sources considered. It suggests that the haematite from Brandberg and Burnt Mountain were not responsible for the pigments used in the production of rock paintings in the study – in Erongo Mountain, instead, the haematite from Erongo used to manufacture ochre is locally sourced in Erongo massif.

The identified compound of haematite is also one of the most dominant iron oxide minerals in the archaeological samples. Besides goethite cited in previous geological samples, no other iron oxide appears to be present in the archaeological samples. Other mineralogical compositions for instance in Group 1 sample: P7 234 and two elements from Group 4: P7c t7 and P7 135 indicates that they are rather of volcanic origin. Therefore, after comparing the

results, it is safer to suggest that hematite was the major mineral used in the colouring materials sampled at Leopard Cave/ OWF42.

Another important geological feature in the matrix is clay evidenced by FTIR and XRD. Even though such methods do not allow full identifications of the clay fractions species with certainty, presence of smectite and clays of the kaolinite family can already be confirmed. Among all the samples analysed the ones from Burnt Mountain near Twyfelfontein and Brandberg appeared to contain such compounds. Archaeological samples from Leopard Cave/OWF42 do not contain such clays. The three Brandberg samples come from the same secondary deposit, however, each of them have secondary mineral specific to each of them. As, none of the archaeological samples analysed contains similar secondary minerals and clay fraction. It clearly indicates that the archaeological coloured materials from Leopard Cave do not come from these far sites.

The two geological samples from also site OWF56 – surface archaeological collection of well as site OWF39 have similar mineralogical compositions and suggest that they come from the same geological deposits present in the Erongo granitic massif. The analyses of pigments groups from the stratigraphic of Leopard Cave are also heterogeneous. This, according to (LAPAUZE 2016) results from exploitation of various sources, availability of such sources and not necessarily favouring any specific pigments in particular. However, despite a large collection of pigmented rocks from the archaeological deposits, only one sample has use traces evidence (O8b Z = 206-215). This according to Lapauze results from “crushing and not abrasion on a millstone”, (LAPAUZE 2016: 75). Furthermore, the presence of pestles from the same levels in this context also suggests the preparation and use of pigments.

In general, other raw coloured materials concentrations at Leopard Cave site from different levels suggest a period of intensification of symbolic behaviour at site. This has also been confirmed through various archaeological materials recovered from different squares. LAPAUZE (2016) has also indicated that the presence of materials with no natural pigments in the study might have been picked up because of their colour and tried as a colouring material.

g. Conclusion and Perspective of pigment analysed

These coloured material analyses only presented the analysed data from two contexts, archaeological from Leopard Cave and geological in the Brandberg massifs and Burnt Mountain near Twyfelfontein World Heritage site. The archaeological deposits and geological samples from two sites in Omandumba West farm suggests that the raw material used in the production of pigment to perform the rock painting sites were locally sourced in Erongo granite massif rather than regional exploitation of raw materials outside Erongo massif. The analyses also showed a significant presence in haematite in many sample - suggesting the preferred source of colouring mineral. Pigment recollected from another site (OWF18) in 2016 as well as the grindstones and pestles from the archaeological sequence of Leopard Cave could not be analysed at the end of 2016. These will be analysed in at a later stage of 2017 to provide absolute dates of the paintings (black and white) and provide information of the material and “*chaîne opératoire*” used to produce them. Their analyses might also provide a better chronological context in which the rock art of the Erongo were painted.

With regards to the *in situ* analyses, the previous results briefly developed tended to show the presence of black representations made of carbonaceous materials. Although sounding promising concerning the direct dating of the parietal figures, the scarce amount of pictorial material used to perform them highly limits this perspective. Indeed, classic C14 dating procedures could require up to 10 mg of material to provide a relevant date. For all the black paintings seen and studied during the fieldwork of November 2016, such quantities would induce a large alteration of the figure’s reading. We have thus to investigate other procedures of C14 samples preparation and analysis to reduce the sample size needed for C14.

As some of the black paintings analysed were already sampled in 2015, further analyses will be carried out to confirm the presence of carbonaceous and better identify their nature as charcoal or soot. The experiments will also investigate the possible use of organic materials, such as wax, fat and blood, in the pigments’ recipes. As for the other colours (red and white), further treatments of the spectra collected on the various sites will be carried out to provide better insights of the pictorial layer’s composition and thickness. Coupled with micro-samples analyses, investigations will focus on the characterization of the pigments and the “*chaîne opératoire*” (the various steps required to prepare the pigment ranging between the collection of raw materials to their application on the wall) involved in their preparation.

7.DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

This chapter reviews the previous research findings to address the thesis questions and objectives. Discussions include interpretation of rock art findings in form of chronology - absolute and relative dating, i.e., sequences of superimpositions - patination, stylistic typologies and archaeological associations. Ethnographic analogies associated with symbolic meaning and social context of rock arts that can be drawn from the data will also be examined. To understand the study sites' context, distribution, and possible functions, discussions about their spatial distribution to hypothesize how the landscape was organized are also presented. Lastly, considerations about management recommendations for rock art sites are also provided, with special focus on the proclamation of the area as a Namibian heritage zone to be protected according to the terms of the National Heritage Act No. 27 of 2007. Thus, I suggest regular monitoring, introduction of conservation measures and regulation of tourism activities.

7.1.Discussion of the General Research Findings

7.1.1.Chronology: Paintings and Engravings in Omandumba Farms

a.Absolute Chronology

Establishing chronology and interpreting the meanings of rock art are some the major challenges in prehistoric art, and the parietal artworks of Omandumba are no different. During this study, there was adequate reason to consider that absolute dating would be possible. For this reason, pigments' samples were collected from several suitable rock paintings sites in Omandumba West farm. These were examined through various analytical techniques described in the previous (Chapter 6, Section C) in order to establish chemical elements present in the materials. These analyses in addition to the *in situ* X-Ray Fluorescence analyses. Preliminary results of this study conclude that only two sites, Blackman Shelter/OWF25 (black colourant) and OWF60 (white colourant) contained traces of carbon accretion, albeit in small quantities. But due to the fact the samples were extracted from very

thin painted layers, they were insufficient for carbon dating at this stage. Samples from these sites will be re-extracted through the on-going research activities in the farm 2017. Should the samples contain sufficient carbon, it is feasible to have absolute dates through procedures of C14 samples preparation and other analysis such as Accelerator Mass Spectrometry (AMS) might be applied to these painting sites. Dating engravings through direct isotopic dating methods is nearly impossible in Omandumba because of their very nature.

Unlike paintings that contain traces of organic materials, though in small quantities, engravings do not contain any, hence, no possibility of direct dating. What complicates the engravings' case even more emanates from the fact that they cannot be dated in association either. Indeed, the engravings' site is found in a location where human habitation would have been possible because they are mostly placed on boulders with no useful open space around site.

b. Relative Chronology

In the investigation, relative dating of both paintings and engravings in form of superimpositions' sequences, patination, stylistic typologies and archaeological associations were also considered. However, these equally proved to be difficult in determining the age of the artworks.

c. Superimpositions

For instance, among the paintings repertoire 38.1% of the total record overlap each other. Among these elements, it was possible to establish at least two to three sequences of superimposition. However, this was only feasible in cases where more than one colour is used or in the event where paints' inconsistency is detected. Conversely, this too, greatly depended of the condition of the artworks. When the artworks are deteriorated, the latter becomes even more problematic. In instances where only one colour was used, detangling these figures was also challenging because the painted figures have the same consistency. Nevertheless, among zoomorphic depictions, there were thematic indicators that particular representations might be older than others. It is observed especially among the fully painted animals in red monochrome such as elephant, rhino and to some extent giraffe depictions. These animals have been prominently superimposed, mostly by outlined with no in-fills or partially outlined animal figures, or other elements. In all these situations, even though sequences of superimpositions are established, they do not give any information about the time gap

between their achievement's periods. However, there is always the possibility that the painters superimposed one figure over another deliberately, and that they are of similar age.

The same problem has been observed among the engravings in the study. Only one case of superimposition was recorded at panel OEF61/39, representing 2% of the total engraved artworks. Establishing which figures were drawn first was challenging. The fact that the figures, (see Fig. 6.8.5.1) appear to be in a bicephalic scene made the latter even complicated. Attempts were made to examine the degree of weathering/patination through magnified glass observations. Because no differences were made with regards to the depth of pecked marks and the fact that the engraved surface produced no colour contrasts beneath it, such inspections provided inadequate results. However, it is also possible that these overlapping engravings could have been made at different times. I based this assumption on two arguments: first, on the fact that some of the engravings - especially those executed on dark surfaces with no contrast - appear to be older due to heavy patination unlike those scratched and placed on lighter surfaces seemingly recent. The second argument relies on some engravings' panels placed in the middle of the river course, which undoubtedly become submerged in the water during rainy season. It is also highly probable that they were created all the engravings at the same time during the same dry season hence variations in patination may have resulted from the various factors including the location of the panels.

In these cases, patination may not be a reliable indicator since many climatic and environmental factors can contribute to a faster or slower rate of patination. Therefore, the use of such phenomena to estimate rock surface ages requires an intimate understanding of the processes active in repatination to which future studies, i.e., micro-erosion analysis and microscopy as per (BEDNARIK 2002) recommendations, may provide adequate and informed analytical data about the patina.

d. Stylistic Analyses

Establishing chronology through stylistic analysis is also questionable because of the variations and idiosyncrasies existing among painted figures. For instance, detailed analyses of rock paintings in Omandumba farms denote a coherent group of fine-line paintings styles. Among them, various styles and techniques exist. These fine-line representations included the outlined sketches with single line, outlined depictions with their interior filled with same colour, outlined figures with their interior partially filled with the same colour, monochrome

paintings with the same colour blocked as well as dichromatic representations. Amid these figures, various colours were used, with red predominating the repertoire (44.9%), followed brown 39.9%, and orange with 13.7%. Paintings in white and black account for 0.8% and 0.7% in the study. Still, colours are not a reliable parameter for determining the age of the painting due to conservation issues, as their rate of deterioration is not the same. However, through superimpositions, it was possible to distinguish probable phases among these colours. Similar findings are observed among the techniques and styles employed in the production of engravings. Most of them have been pecked finer with smaller controlled peck marks, followed by those scratched and polished. Yet, these different styles and techniques did not necessarily indicate the age of the artworks.

It is likely that a society might be represented by more than one style because of social class, gender and function's diversity among its members. It is also possible that two different social groups might even co-exist within the same geographic space, thus possibly leading to the emergence of a unique style (HODDER 1978). Therefore, using style to demarcate social boundaries and confidently establish the identities of the painters and engravers is difficult. Furthermore, cultural boundaries are even more blurred especially in this specific geographic landscape where archaeological evidences suggest social relations of various groups of people (PLEURDEAU et al., 2012 & PLEURDEAU 2016). In this study, both paintings and engravings differ considerably in terms of their themes. Paintings are quite narrative, with scenic representations of hunting, dancing, ceremonial activities, leisure and probably trance events drawn upon metaphoric contents directly linked to everyday experiences as manifested by the relative large number of anthropomorphic figures. Animals dominate the paintings, like humans, they too form groups with clear relations to each other.

The engravings on the other hand are non-narrative. Spoons/tracks representations are abundant while animal figures and human footprints are quite few and rarely in scenes, thus, these individual representations do not relate to one other. The examination of the figurative contents, techniques and fine-line styles in paintings and finer pecking with smaller controlled peck marks and light scratching in the engravings suggests that the hunter-gatherers were likely responsible the production of artworks as the entire activity repertoires reflect their social and economic system. The continual depictions of large and powerful animals, i.e., giraffes, rhinoceros, elephants, felines, other hunted animals as well as the scenic

representation hunting and gathering activities serve as common denominator connecting hunter-gatherers artists/ society in central Namibia and in Southern Africa's regionally.

It is generally accepted that hunter-gatherers' tradition represents the oldest rock art tradition, which persisted in southern Africa until the 19th century AD, (LEWIS-WILLIAMS 1990; ANATI 1986; SMITH 1997) and in Namibia (LENSSEN-ERZ et al., 2005; KINAHAN 1996; 2005). While full certainty has not been reached, mainly due to the challenges of dating rock art, the majority of paintings and engraving in Southern Africa including Namibia seems to have been made during the Holocene period, belonging to Late Stone Age. Some may be older, as for example, Apollo 11 in Namibia dated back to about 26 000 BP (WENDT 1972).

While studying the styles and themes of rock paintings and engravings in the Brandberg Mountain, Jürgen Richter (RICHTER 2002a) has defined possible chronological sequences of hunter-gatherers rock art of central Namibia based on their typology. Using the giraffe as an example (Fig. 7.1), the author suggests that different styles may indicate a possible chronological gap between the figures. In this scenario, he (RICHTER 2002a: 527-532) indicates that detailed paintings or engravings with specific attributes and clear representations of their living counter parts (fully painted/engraved) are attributed to representation mode 1a, which is older. Animal designs linked with their spoor/tracks belong to representation mode 1b. Where animal representations match with their tracks, they are thought to be from mode 3, while the mere representations of animal spoor are thought to be the recent depictions, attributed to mode 4.

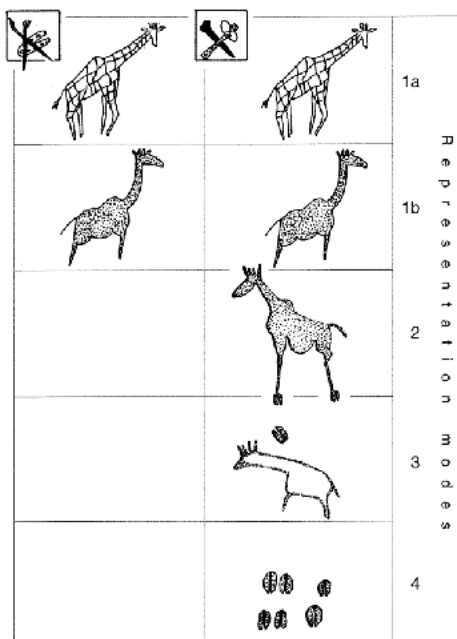


Figure 7.1 The representation modes in engravings and paintings of Central Namibia. In possible chronological; sequence from top to bottom

1. More or less naturalistic animal representation,
2. Animal representations with linked tracks
3. Animal representations with assignable tracks at some distance
4. Mere track representations.

The typology of rock art in Omandumba farms shows similar trends, as demonstrated by various fine-line

depictions and succession of superimpositions. Therefore, if we were to accept the spectrum of the representation modes as a chronological development, this would mean that outlined figures and spoors depictions in the study are likely to be the recent artworks and, therefore, painting tradition probably persisted a little while longer until mode 3 in Erongo, while the engraving tradition is likely abandoned at mode 4. This chronology slightly differs from the one of the Brandberg where painting tradition is reportedly abandoned before mode 2, while engraving disappear with the end of mode 4, including spoors depictions at Twyfelfontein (RICHTER 2002a: 528). Such assumption is further collaborated by the existing evidences from palaeoclimatic reconstruction in central Namibia (TYSON 1986; HEINE 1998; RICHTER 1991; BIERMAN et al., 2001; BRÜMEL et al., 2001). Aridity of the Namib Desert intensified throughout the Holocene period, which subsequently changed the mobility patterns of hunter-gatherers, due to reduction of critical resources (water and food). Erongo Mountains unlike Brandberg and Spitzkoppe massifs receive more than twice the 100-mm annual rainfall. Therefore, its ecological zone may have offered a habitable environment, wider varieties of game and seasonal plant foods throughout the year. As a result, hunting and gathering economy may have survived into more recent time without being entirely displaced by herders' groups.

e. Associated Archaeology

The most common archaeological features in Omandumba farms (excluding rock art) are widespread scatters of Late Stone Age surface materials including fragments of potteries, charcoal, lithic materials, ostrich eggshells' fragments, beads, pestle, hearth sediments and some stone structures. However, such materials are only restricted to some painted sites, especially rock shelters and cave shelters with evidence of occupation as well as few sites. Since the engravings are confined to a small-scale area and the absence of associated contextual archaeological finds made it difficult to date by association. The small grit-tempered potsherd discovered in the site cannot be dated in association with the engravings since its origin could not be firmly established. It is not certain whether the potsherd is from the same cultural authors who made the engravings or whether it was a later addition.

The rock paintings of Omandumba on the other hand; have been linked to associated archaeological remains recovered from the LSA archaeological excavation of the occupation layers in the Fackelträger rock shelter/site OWF39 in Omandumba West (RICHTER 1991). Here, the mid-section of the horizon B of the LSA occupation (Fig. 3.7) had produced a

concentration of 360g of hematite and pigment-stained pestle dating between 3.500BP - 2.000BP and/or from 1,550 BC \pm 50 AD. Such find is likely linked to the production of rock art. The site's LSA sequences had also recovered various animal remains including ostrich eggshells, springboks, steenboks, oryx/gemsbok, klipspringers, dassies and rabbits among others (WENDT 1972:10; RICHTER 1991:48). These findings have been complimented by another prominent LSA archaeological site in Omandumba West farm is that of Leopard Cave, south of the Fackelträger shelter (Fig. 3.9). Here, archaeological evidence directly linking the rock paintings in Omandumba to the site occupants was the discovered through *in situ* pigmented grinding stone and pestles artefacts (Fig. 4.12) recovered from Layer (P7) dated between ca. 3200 and 3500 ka BP (PLEURDEAU et al., 2016). The findings therefore suggest that the mode of preparation were likely to be as a result of crushing followed by a grinding thus attesting intensive use of colours. Such findings make Leopard Cave the only site, in Central Namibia, where paintings are directly associated with the tools dedicated to the preparation of pigments. Their analyses are on going and results might provide an improved chronological context in which the rock art of the Erongo were painted.

Furthermore, the site's LSA assemblages includes lithic artefacts, beads and pendants ornaments, and evidence of human remains burned with anthropogenic cut marks dating from about 6000 years (PLEURDEAU et al., 2012; PLEURDEAU 2016). The site's fauna taxon is represented by minimum number of individual species including ostrich eggshells, medium-sized bovids such as impala (*Aepyceros melampus*), springbok (*Antidorcas marsupialis*) while klipspringer (*Oreotragus oreotragus*) is represented in the small bovid category.

These evidences have convincingly indicated that there seems to be a link between the choice of some animals painted or engraved and the dietary preferences. The analysis of the faunal remains at these sites indicates that the meat component of diet was derived from both hunted game, including antelopes such as springbok, steenboks, oryx/gemsbok, klipspringers and from small, easily captured animals like lizards and rabbits. Eggs, from the ostrich eggshell fragments may have supplemented the diet. The antelope species correspond to the antelope recorded at the site-painting repertoire (see Fig. 6.16 and Fig. 6.18). Correspondingly, some of recovered animal species from Leopard Cave also match the painted animals in cave shelter (see Fig. 6.22). As a result, these evidences suggest coherence link between painted figures with archaeological materials.

Among the fauna corpus are two Caprine remains (sheep/goat) dated back to 2300 BP – making it the oldest evidence of domestic animals in the entire Southern Africa (PLEURDEAU et al., 2012). However, there is direct link between the Caprine remains and painted animal figures, as they do not correspond. The main explanations for the sharp differences among the faunal remains in Leopard Cave such as the sheep or goat bones may indicate a scenario where hunter-gatherers probably had access to some domesticated animals as evidence of painted sheep were recorded at some younger sites in the Brandberg (KINAHAN 1991; RICHTER 1991; PAGER 1993). Since there are no data on the size and distribution of herding sites in Erongo Mountains, it is difficult at this stage to confirm an apparent succession of hunting to herding economy or a situation where both groups co-existed, which will point to a mutual use of the landscape. At present, it is safer to suggest that the age of Omandumba rock art is therefore based on the general position of hunter-gatherers rock art sites within the occupational history of Central Namibia, particularly the Late Stone Age chronology phases A – F (see Fig. 3.4).

7.1.2. Meanings of Omandumba rock art

Researchers have tried to understand the symbols and metaphors in hunter-gatherers' rock art tradition of Southern Africa thanks to the wealth of ethnographic information collected from the 19th and 20th centuries (BLEEK & LLOYD 1911; THOMAS 1959, LEWIS- WILLIAMS 1990; LEWIS-WILLIAMS & DOWSON 1989; MARSHALL 1976, 1999; LEE 1979; BARNARD 1992 just to mention but few). This information has provided insights into the possible meaning and context of rock art, even in Namibia where neither historical testimonies nor ethnographic accounts of the San were ever recorded. The artists beliefs, myths and views on the cosmos are complex, tiered and multifaceted, and this study hinges on various lines of evidence in the search for the symbolic meaning behind painting dance postures. Some of the main lines of interpretations were that their rock arts were created as part of religious practices including boys' and girls' initiation, rainmaking rituals, healings and other shamanistic activities.

The co-occurrence of the rock paintings and engravings in this cultural landscape offers avenue into the investigation of the meaning and interrelationship between these two types of rock art. It further allows an examination of rock art within its landscape's context. Below are some impressionist remarks made regarding the meanings of some rock painting sites from

Omandumba postulated by Verena Börner, (BÖRNER 2013) who applied shamanistic theories to some rock painting sites.

a. Animal Potency:

a.1. Spirit animals:

Eland, for example, is said to be associated with the initiation rituals of boys and girls, and its role in healing and rainmaking activities. It is understood that associating with eland could bring the shaman closer to the gods and their supernatural powers. In trance, the shaman would then feel as he/she was turned into an eland (LEWIS-WILLIAMS 1981:75-101). At Crown Boulder/site OWF52a, Börner made reference to the presence of two elands' depictions (a bull and a female) (Fig. 7.2.).



Figure 7.2 Eland 's depictions at Crown Boulder / site OWF52a.

Börner argued that, the seclusion of this site from habitation areas such as Fackelträger shelter/site OWF39, Leopard Cave/site OWF42 and Seal Shelter/site OWF49, in addition to the absence of surface archaeological artefacts, and the site

morphology – flanked by boulders and accessible through small passages – suggests that Crown Boulder was likely used for such ceremonies.

It is also believed that San people attach great values to bees and honey (LEWIS-WILLIAMS 1981, 1983). Apparently, the buzzing sounds of swarms of bees have a powerful association with sensations experienced in the altered state of consciousness. The /Xam community in the Kalahari even performs Honey Dance (MARSHALL 1999:55, 73, 76-77). It is believed that the shaman “becomes” the honey (meaning that the shaman acquires the honey’s potency), and honey and baby bees were said to contain strong potency (Marshall 1999:55, 73, 76-77). Today, the Ju/’Hoansi even call the Great God the ‘Mother of Bees’ (THOMAS 1959; LEWISWILLIAMS & PEARCE 2004). Therefore, the presence of the bees and their swarms at the site (Panel OWF22b – see Fig. 6.41) might afford a compelling support for this interpretation (HOLLMANN & HEINE 2003). In this study, elands depictions are less frequent and are likely to be substituted by the springbok and giraffe (SCHERZ 1986; LENSSEN-ERZ 1997), which would imply a regional variation in the ritual significances of certain animals. There is an apparent insufficient ethnographic information about other antelopes such as oryx, kudu, springs, impala, duiker bucks and klipspringers game that are in abundance in the study. However, available evidence suggests that their metaphorical significances are linked to environmental and economic concerns rather than religious beliefs (CAMPBELL et al., 1994:138).

a.2. Rain making animals:

Other analogies related to the potency associated with certain animals are the significance of mythical rain animals, i.e., the large and powerful game such as rhino, giraffe, serpents, large antelopes and elephants (VINNICOMBE 1996; EASTWOOD et al., 1999; HOLLMANN and STEYN 2003; LEWIS-WILLIAMS 2006; OUZMAN 1996, 2002, 2010) as part of the rain making ceremonies among the hunter-gatherers. The last 5000 years oversee an increasing aridity in central Namib (HEINE 2005) where human began to adapt to desert environment (KINAHAN 2005:120). Such shifts translate to competition of scarce food and water resources for both people and animals, which might have forced hunter-gatherer groups to intensify ritual activities to strengthen their traditional values and cohesions by ensuring successful hunting. The ethnographic records within Kalahari hunters support this assumption where ritual activities are reportedly intensified when resources were scarce according to (LEE 1979; BARNARD 1992). It is therefore suggested that these rainmaking animals were placed at crucial places in the landscape to enhance the power in the rainmaking activities by adding intangible aspects of the place (DEACON 2002).

Rhinoceros are considered potent animals because of their size and aggression. They are thought to possess large amounts of body fat associated with San religion. The rhino's supernatural potency is based on their tendency to sweat profusely consequently its association with water. Rhinos are thought to be active at night and therefore identified with rain (HOLLMANN & LEWIS-WILLIAMS 2006:511). Their juxtaposition near springs at the engraving site (see Fig. 6.135 & Fig. 6.147) might be due to the fact that springs were likely to be the only available water sources in this area, especially in dry seasons, hence, an underlying association ritual activities. Its juxtaposition at the ceremonial site of Priests Shelter/site OWF46 (see Fig. 6.25 and Fig. 6.27) may have been a deliberate attempt to enhance the power in the rainmaking activities by adding intangible vales to the site. Giraffes are also considered sacred rain-animals. It is believed that because of their long neck, they stretch into the clouds, therefore deemed as a rain-giver (HOLLMANN & LEWIS-WILLIAMS 2005; EASTWOOD et al., 1999; OUZMAN 2007). Giraffes' and rhinos' depictions in the study are rarely found single on the various sites. They are largely found in association with each other, with clear relation to other figures. Some particular sites stand out, where giraffes, for instance, are placed next to landscape features, e.g., at Crown Boulder/site OWF52a, where they have been paired to what has been identified by local San people as 'rain crowd' like figure (see Fig. 7.1.2), while at site OWF52b, OWF39a, OWF50 and OEF60a, they have been are juxtaposed to arboreal representations. At the engravings' site, these rain animals are found in close proximity to the first spring of the site (Panel OEF61/37).

Moreover, serpents are also believed to be part of the rain making beliefs. Large serpents are said to guards the sites, while some are thought to dwell in sacred pools found either on mountaintop or near spring the foot of the mountains or hills (VINNICOMBE 1996:233; DOWSON 1998:75). At site Seal Shelter/ OWF49, a serpent depiction (Fig. 6.93) with two seemingly bodies has been juxtaposed on a rock surface near the entrance of the site. This site has a fair amount of LSA surface artefacts and sediments suggesting previous occupation phases. However, the close proximity of a spring that holds water during dry season is of crucial interest. If we are to accept the metaphors associated with this interpretation, it is probable that the serpent serves the previously mentioned function, hence, attaching not only ritual importance of the site to its locations in the landscape, but also attesting connection with the geomorphological variables of the rock formations.

a.3.Enigmas:

Omandumba farms have many animal representations whose metaphorical meanings are beyond our understanding. For instance, feline depictions constitute major enigmas. The dangerous felines are said to have supernatural powers and could become invisible. San believe that shamans could turn themselves into lions⁷. This interpretation by the local San man from Omandumba San Living Museum offer a convincing evidence for this interpretation because the depiction of feline at site OEF60a (Fig. 7.3) appear hidden behind a tree like figure. However, other metaphoric interpretations cannot also be ruled out.



Figure 7.3 Feline depictions at site OEF60a.

b.Spoors Figures:

Omandumba has a large number and variety of animal spoors and human footprints. In the painting repertoire, rare depictions of what appear to be antelope spoors have been recorded at site OWF08 paired with matching animal species (springboks and oryx/gemsbok, see Fig. 6.88). In the engraving dataset, animal spoors outnumbered human footprints. Spoor representations are said to be

archetypal metaphors representing two dominant concerns – identity and journeys – signifying human–animal relation (OUZMAN 2010). Like information revealed from the local San men from the SLM, a skilled tracker can use spoors to precisely identify an animal – even distinguish between spoors of a wounded animal and that of the rest of the herd – their numbers and sometimes their sex and indented destinations and so forth. Therefore, the fact that the natural springs were mostly likely the only underground source of water for both

⁷Kxao /Lukxao, personal communication, 04th April 2015, Omandumba West Farm

people and the animals especially in a dry season meant that both human population and animal may have competed for water, hence, the site became not only strategic hunting spots but also cultural site where arts were produced.

The dominance of the antelope spoors signifies not only the preferred hunted animals or its abundance in the environment but perhaps its symbolic meaning to the hunter-gatherers as interpreted elsewhere in the case of deer's' depiction predominance: human-deer symbiotic relations evolving into symbolic isomorphism between human and deer behaviour, which could also be the case for antelopes (CAMURI, FOSSATI et al., 2002; IGNÁCIO 2009). Therefore, a general explanatory approach using potencies associations with animal figures can be replicated here. Rock art then belongs to a cognitive tradition in which metaphorical potency of certain animal figures was harnessed for the purposes of rain-making rituals and as medium of communication as attested by the dominance of antelope spoors as well as large and powerful animals like giraffes, elephants and rhinoceros.

c. Spirit World

c.1. Trance metaphors:

Ethnographically, the hunter-gatherers' world understanding was that there was an ordinary World in which normal people physically dwelt and a spirit World accessed by trained powerful beings, Shamans or Medicine People only (LEWIS-WILLIAMS 1981). It is said that anyone could become a shaman, but their task was painful and dangerous, as they had to travel in strange and often hostile spiritual dimensions (Ibid 1981).

Although therianthrope figures depicting a blend of animal and human bodies, are commonly found in hunter-gatherers rock art of southern Africa (BUTLER 1997; LEWIS WILLIAMS & DOWNSON 1999), Omandumba repertoire suggests very little record of these figures. These figures are distinguished from 'normal' human figures in sense that they consist of a blend of real and nonreal representations. It is shamans believe that they turn into animals when they enter altered states of consciousness during the trance dances. Human depictions in trance postures are fairly well documented in hunter-gatherers' rock art tradition in Southern Africa (see for example (LEWIS-WILLIAM 1983a; LEWIS-WILLIAMS & DOWSON 1999:40; BLUNDELL 2004). Some of these distinctive postures include bending forwards, arms extended backwards.

In this repertoire, numerous human figures in trance postures have been recorded at few sites—about 3 and makes up 0.2% of figures. Referring to trances’ postures, Verena Börner (BÖRNER 2013:5) has cited three prominent anthropomorphic “ghosts” figures (Fig. 7.4) at site OEF60b (see Fig. 6.1.40 for entire panel), painted exclusively with white colour and displaying some characteristic traits of the “Eldritch-figures” coined by G. Blundell (BLUNDELL 2004). Here, the “ghostly figures” are depicted in postures associated with the altered states of consciousness. One of the figures appears to lie (superimposed) on the other’s back “the arms-back-posture assumed when the inner potency reaches a boiling state” (BÖRNER 2013:5) while other ‘ghost’ figure – the larger ghost appears to be leading all other figures at the panel while in procession in a white female kudu immediately in front of it.



Figure 7.4 Human depictions in trance postures at Ghost Cave/site OEF60.

Börner suggests that paintings at the site can be linked with concepts of “ghosts”, Ju/’Hoansi trance potency associated with, death, disease as well as female affairs and fertility. There are also three similar spindly human figures in bend forward postures (another well know trance posture) were recorded at the site OWF11 (see Fig. 6.79 left). Börner’s study had also indicated that such figures are linked to the trance metaphors. Therefore, it is probable that the locations of these sites are of mythical importance, and that ritual activities were then connected to these specific sites in the landscape. Like at sites OWF52 and OEF60, site OWF11 was also inhabited due to the site morphology and complete absence of surface archaeological collections. And if there were artefacts, it is likely that such materials were displaced due to water leaking, wind erosion and animals. What was interesting with all these sites was the fact that the painted surfaces have either cracks, fissures or rock crevices and other features which gives impressions that these features were incorporated into the rock art to serves as entries to the supernatural World. These specific features may have represented

and strengthened the spiritual belief system” of the painters and in doing so, adding values to the sites.

Another interesting case is that of the human footprints at site OEF61/ engraving site. The majority of the imprints are frequently placed next to inaccessible surfaces as if these indicate paths and entrances into spirit World. Sven Ouzman (OUZMAN 2002) who interpreted similar rock art in Twyfelfontein suggests that shaman could move through solid rock, using entrance not visible to the initiated eye. Such rock surfaces were apparently not mere canvas, but veils serving as threshold to a parallel spiritual World. However, no explanation is given why some human footprints have extra digits/toes or incomplete toes (see for some samples at Panel OEF61/14, Fig. 6.132; Panel OEF61/34 Fig. 6.144 and Panel OEF61/36, Fig. 6.146). It is therefore possible that both spoors and human prints were conceptually linked to other rock art in the region, forming routes that people could follow as part of quests to form and renew relationships with special places and re-affirms their duties as custodians of the land” (Ibid 2002).

7.1.3.Spatial context and distributions of Omandumba rock arts

One of the main research questions was to establish whether the art sites of Omandumba farms were deliberate or random actions, and whether one could detect certain patterns of distribution, which could point to their possible functions. This question was of utmost importance to the researcher due to little previous rock art’s investigation in Erongo Mountains in order to establish whether the distribution of Omandumba rock art had a density comparable to other well-researched sites in Central Namibia.

The spatial distribution of the rock art sites in Omandumba farm (Fig. 6.1) indicates that the rock art does not reflect the entire distribution of human activity in this area, because the sites were only located at specific geographic zones. Painting sites for instance, are restricted to granites, which generally follow the natural geological formation of the area.

The distribution of the sites indicates that the majority of the artworks are hosted primarily on boulders, followed by those in rock shelters, granitic walls and caves. Their concentration and distributional pattern appear to have been an act of marking the landscape because the sites indicate the commencement of specific topographical feature and the end of other. It emerged from the study that the majority of the sites 94% are closely clustered in a valley, at the foot

of hills among large boulders, suitable rock and cave shelters while others are found in isolated rock outcrops, which marks the end margins of the slopes. Only 6% of sites were placed in rock shelters and boulders uphill slopes that often mark the beginning of the rise of slopes. The engravings on the other hand are confined to a small-scale concentration of basalt deposits with a narrow passage (small river course) that connect two sections of the site. Therefore, their spatial restriction can be linked to the patterns of behaviour in the use of a landscape as well as geology. Furthermore, the characteristic, quantity and spatial distribution of the sites allowed one to hypothesize about how the landscape was organised, pointing to possible sites' functions.

The spatial analyses revealed that the majority of paintings' sites located at the foot of the hills slopes are easily accessible by foot and are found within 500m of the river tributaries, while only 33% resides 500m away and more from springs. About 10% of painting sites located at the top of elevations are found 100m in the immediate in proximity to ponds. These waterways only have water sporadically, for instance, the rivers flow only during rainy season, whereas springs hold adequate water supplies of water until the next rainy season and pools are fed by run-off from granite slopes but often dry up after rainy season.

The fact that 94% of the sites are located within 500m from water points implies that the rock art sites at low elevations functioned as places where both communal social, economic and casual ritual activities likely took place. Therefore, it is safe to postulate that hunter-gatherers chose the sites because they were located at vantage points or the presence of what (LENSSSEN-ERZ 2001:51) termed 'basic needs' or natural infrastructures, such as water, food and shelter. For instance, among the sites located at the foot of hillslopes, only 20% afforded shelters (short/long term living spaces) with high to low traces of human habitation. The sites could have provided security from predators or rival groups. These sites have direct access to food and water resources - especially during dry season, when springs would act as magnet to congregate game animals, and some of them might have served as casual ritual sites. Their geomorphological formations and location in the landscape would be ideal for dwelling purposes because they would shelter hunter-gatherers from the harsh westerly wind from the Namib Desert. The orientation analysis of these sites suggests that these sun-warmed boulders in between the shelters would store heat during the day, which would keep the spaces warm at night. Therefore, these sites would have been ideal places for social interactions.

The remaining 80% of them were not habitable due to their geomorphological formations. Boulders and granitic walls hosting these sites are virtually free standing vertically to the ground or forming clusters of sites in the landscape. They do not shelter, hence, are often exposed at the surface to various degrees of increment weather conditions such as sun, rain and wind. The sites proximity to water sources would make people susceptible to danger from predators at night, hence, they were simply not ideal for habitation. This assumption is further strengthened by the small or absence of human traces. Therefore, it can be argued that the sites may have served several functions to painters including but not limited to: overnight stations for hunters or waymark sites since they are located along the natural travel routes, or small hiding places where hunters might lie to ambush game coming to springs, or casual ritual activities' sites such as rain-making and initiations' ceremonies where likely performed, e.g. site OWF52, OWF11 and OEF60 (see Fig 7.2, Fig. 7.3 and Fig. 7.4).

Sites located uphill slopes are secluded, with no neighbouring sites and have difficult access. They account for 8% of the study corpus, e.g., sites OW30, OWF44, OWF45, OWF46 and OWF47. These sites are far from natural infrastructures: water, game and access to convenient flat areas. The only immediate form of water source is in form of ponds/pools. Among these sites, only site (OWF30) confirmed evidence of human occupation as attested by the mundane activities (stone tools, charcoal, bones and pestle) and the site geomorphological formation. It can be argued that sites conveniently occupy vantage points, viewing the larger landscape. Due to their topographical locations, it is possible that the whole landscape was kept under surveillance and allowed hunters to observe the movements of other people and animals, and spot and track animal migrations. Such position on the landscape provided prehistoric occupants of Erongo Mountains with a convenient location to view Omandumba and other areas of interests. It is therefore possible these sites likely functioned as hermitage sites where ritual activities might have been performed. Figures at the sites have their idiosyncratic characters common in hunter-gatherers' ritual activities, while sites OWF46 and OWF47 (Priests and ostrich shelter sites) are closely associated with stone structures (Fig. 6.22 Fig. 6.28).

The engravings on the other hand were confined to a small-scale concentration of basalt deposits with a narrow passage (river course) that connects two sections of the site. The site's geomorphological setting, its spatial distribution in the landscape as well as the absence of surface artefacts, apart from small grit-tempered potsherd, suggest that the sites did not

function as a place where human habitation would have been possible. The artworks are primarily placed on vertical surfaces with no useful open space unlike the painting sites that offers shelters. It is also highly probable that the engravers did not lived for a long period, given the limited number of engraved panels as opposed to those unengraved because the engravings' tradition might not have been as spread as the paintings or that it lasted a shorter periods. It can therefore, be argued that the sites functioned as important markers in the landscape, indicating water's availability (springs) and game animals as hunter-gatherers passed for navigation in the landscape. This assumption is collaborated by two facts: firstly, being that all engraved panels are narrowly confined in the interior of the site – primarily, the mid-section of the site slopes, the bottom and in the river course way – which would have been easily accessed by the engravers as they walk in the riverbed and not on the exterior/margin of the site.

It is said that mobility was not only a necessity for the life of hunter-gatherers but also a mean of communication (MARSHALL 1976), consequently, it is possible that creating the artworks at a waymark like this site would have been an expression of their identity, fostering their nomadic lifestyle and celebrating their mobility (LENSSEN-ERZ 2008:29-50); and secondly, by the presence of fresh spoor of various animals at the site – which, would indicate trail system connecting the site to a wider landscape. The fact that some panels are in the river course way indicates that the artworks may have been produced during dry season as they become submerged in water. Furthermore, it is also possible that the site may have served as a strategic hunting locale where animals would have been ambushed at water points (springs) during dry period when shortage of water and food forced people to congregate near the spring as climatic records indicates increased aridity during the Holocene period in Central Namibia (HEINE 2005; Smith 2008). The ethnographic records also indicate that ritual activities were intensified when the resources were scarce (LEE 1979; BARNARD 1992).

Based on the spatial analysis in the distribution of the sites, I should stress that the sites may have multiple functions other than those discussed under this research enquiry. Therefore, with the evaluation of the 61 sites, they lead to profiles features that allowed assigning them to these specific classes coined by (LENSSEN-ERZ 2008:37-47) (see also the location of the sites in Fig. 7.5).

- Class A: Landmark or waymark sites (in green-Fig. 7.5), located along the natural travel routes or near remarkable feature along such routes. All uninhabited, the sites located at the foot of hills and near conspicuous landscape features such as passages or saddles in the mountain with few human traces like rock art and artefacts. The majority of the artworks depicted at the sites show people moving in small or large groups bearing hunting equipments, long sticks and some unidentified objects. These sites make up (28) 46% of the corpus of sites in the study. Examples of sites under this category includes site OWF09 (Fig. 6.3), OWF11, OWF12 (Fig. 6.5), OWF50 (Fig. 6.30) and OWF56 (Fig. 6.43) as well as many other sites hosted on mainly on boulders and granitic walls).
- Class B: Short-term living sites (in purple -Fig. 7.5), small shelters with few human traces, may have been for instance, an overnight station for small hunting part. Example of such sites in the study includes: site OWF13, OWF14 OWF15, OWF16, OWF17, OWF19, OW20, OWF21 and OW25/Blackman Shelter and OW30/Christian Shelter (Fig. 6.7). The sites attain (11) 18% ratio among all sites.
- Class C: Long-term site (in red-Fig. 7.5), large shelter with a lot of space and useful natural infrastructure nearby, relative few paintings but ample traces of presumably social activities (stone tools, bones, charcoal). In the study, one site fit for this profile is site OWF42/Leopard Cave shelter (Fig. 6.20 & Fig. 6.21), and site account for 2%.
- Class D: Aggregate camp (in light blue-Fig. 7.5), similar characteristic to Class C, but significantly more paintings. Only two sites fit this profile in the study, namely: site OWF39/ Fackelträger Shelter and site OWF49/Seal Shelter. They account for 3% (see Fig. 6.13) of the corpus, but have large number of rock painting figures. Features that characterize these sites include: direct access to immediate surrounding, good visibility of the landscape, and strong emphasis on women in paintings and have various sites in proximity.
- Class E: Casual ritual sites (in yellow-Fig. 7.5), similar to Class B but bearing significantly more paintings or engravings. They account for (14) representing 23% in the study. These sites are relatively small, with low intensity of usage and have neighbouring sites in proximity. They also have complex paintings most of which

are highly visible within 15m ranges. The artworks depicted at these sites serve as hot spot for communications among people and spirit World beings linked to shamanistic activities. Examples of such sites are OWF05/Scherz Fissure, OWF 43, OWF11/Strey Wall, OWF52, OWF55 and site OEF61/the engraving site among other site (Fig. 7. 5& Fig. 6.79 left).

Class G: Sanctuary (in dark blue-Fig. 7.5), hermitage, isolated sites off from the usual natural infrastructure, with unusual depictions. The profile described by Lenssen-Erz of these sites includes the fact that they occupy vantage points – providing panoramic view of wider stretch of the landscape, occupying isolated locations with difficult access and do not have direct access to basic resources. In the corpus, these sites are less frequent and account for (5) 8% for the whole corpus of sites in the study. Sites fitting this profile are site OWF44, OWF45, OWF46, OWF47 and OEF60 (see Fig. 6.23 and Fig. 6.29). Artworks at the sites are placed at inaccessible locations such as ceilings of rock crevices and on boulders with restricted movements. The sites occupy the hilltop in the study.

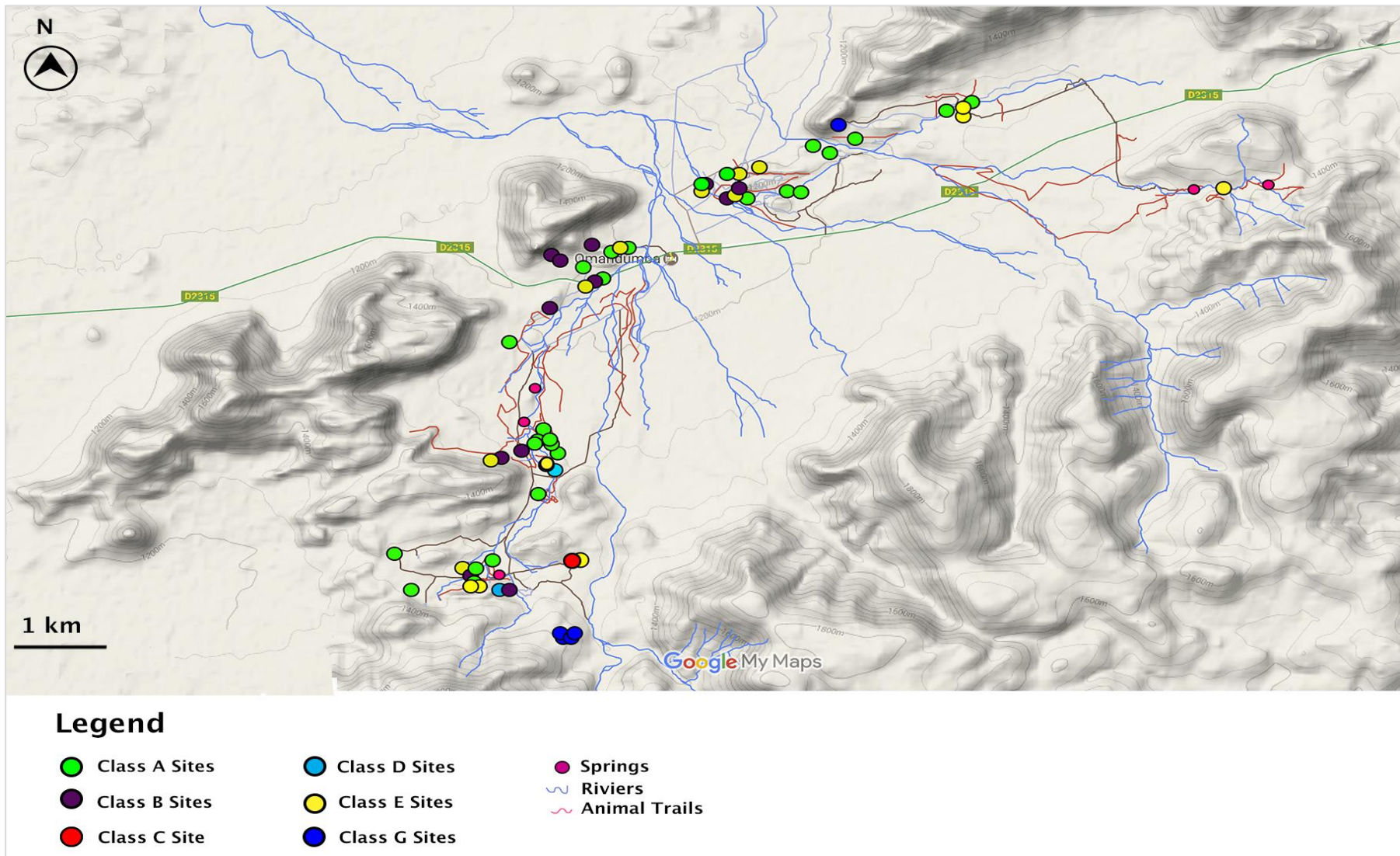


Figure 7.5 Map of Omandumba Farms indicating the location of six classes of sites according to their functionality profiles summarised above.

Although geology have been the determining factors in the distribution and techniques of two genres kinds of rock art (paintings and engravings), their occurrence in this cultural landscape is not surprising given the fact such manifestations are quite common in Central Namibia as observed at some of the well know sites like Twyfelfontein (SCHERZ 1975,1986; OUZMAN 2002; KINAHAN 2010) and in the Brandberg Mountain (SCHERZ 1975; OUZMAN 2002; GWASIRA 2012). Similar to the situation of Twyfelfontein, both paintings and engravings in our study do not also present cases of direct contact between themselves unlike those recorded in Brandberg where superposition of paintings over engravings occurs (GWASIRA 2012). It can be argued that the congruence of paintings and engravings in the same cultural landscape was not a random act but a way of appropriating the landscape through forming routes that hunter-gatherers people could follow as part of quests to forge and renew relationships with special places and assign their identities.

Following discussions about the spatial distribution of the sites above, another important research question in the study was to establish why the artworks where only painted and engraved on specific surfaces or location and not others.

To answer this question, the landscape analyses of the sites demonstrated that there were other motivating factors that were likely considered when the prehistoric people chose what figures to place and where to place them on the rock surface. The analyses, therefore, established that - for whom notion - the intended audiences of the figures, largely influenced the painters and engravers decisions regarding the size of figures, how many to place on each rock surface, their colours (pigments used), the techniques employed (paintings/engraving) and even considered shape of the rock and its aspect/orientation, accessibility and the locations they occupy in the landscape. This has resulted in the situation where only specific rock surfaces where chosen and not others.

For example, among the painted sites in the study, there is variability in visibilities of the artworks. The analysis indicated that 15% of sites containing y 24% of rock-painting figures are visible from less than 1m optical ranges, which is classified as 'very private'. These sites occupy several topographical locations in the landscape, but they do not serve as entry sites to their localities (as they have neighbouring site/panels) but are often hidden and can only be viewed by one person at a time – either in a squatting, sitting or bending position directly in front of the painted rock surface or in laying on the back position because the artworks are

placed at these positions 2, 4, 8 & 9 (see Fig. 6.71 and definitions in Table 6.7). The sites restrict movements around their area hence most of their figures were photographed with difficulties to such an extent that even using IFRAO scale was impossible in some situations. This phenomenon has been observed for instance at site (OWF42/Leopard Cave (Fig. 6.21; OWF47 – Fig.6.28, OEF60b – Fig. 6.51) and other sites in the study. Under the spatial analysis in the distribution of the sites, they were registered mainly in Class E, G and one site in Class C – site OWF42/Leopard Cave. The majority of the artworks at these sites are extremely small, but very well detailed and they seem to give an impression that they are either emerging or disappearing into cracks or rock crevices while interacting with the layering in the rock surface, like at site OWF12 (Fig. 6.6) and OEF46b (see Figure 6.27).

As demonstrated by the ethnographical records, these rock surfaces apparently act like a membrane between this and the other World (LEWIS WILLIAMS & DOWSON 1990). Therefore, the cracks were likely viewed as pathways, which connected the World and could only be followed by shamans and inhabitants of the spiritual World (OUZMAN 1998:36). Other examples of ‘private sites’ sites are shown as follow:

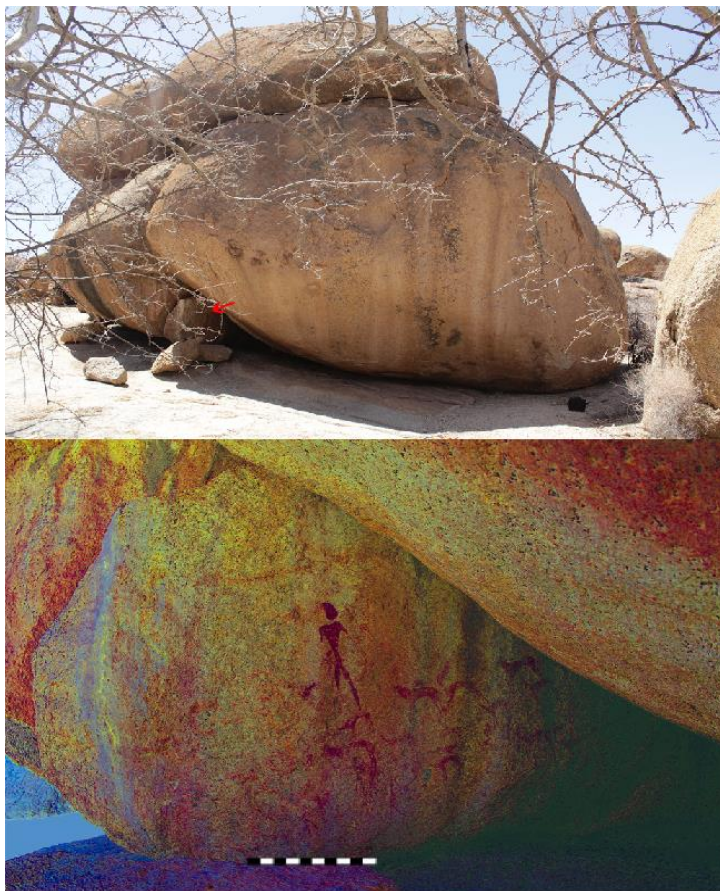


Figure 7.6 Site OWF05/Scherz's Fissure. The marked image on top reflects the location of the fissure at the site while the bottom image in a close up image of figures on the fissure. Artwork at the site can only be viewed at squatting/sitting position.



Figure 7.7 Sites OWF45. Image on top indicates the narrow entrance of the rock crevice where the artworks are placed.

The bottom image has been stitched to compose the figure, as it was impossible to photograph the entire snake figure in one image due to restricted movements. Figure at 10cm. Artworks at the site are viewed at squatting position as the figures are placed at position number 6. The figures are painted in brown monochrome but only the snake's body has been outlined. The site is located on top of a kopje-facing Leopard Cave.



Figure 7.8 Site OWF43. The left image indicates the location of the painted location – at the narrow passage of the site with restricted movement.

The figure depicts what appear to be a fully painted bichrome (brown and black) rhino. The site is located 30m east of Leopard Cave, at the bottom of cretaceous massif

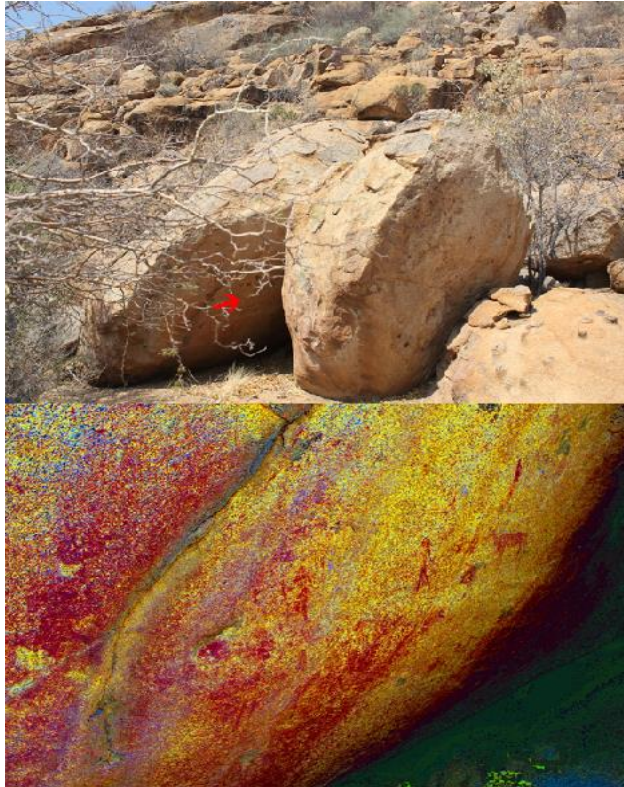
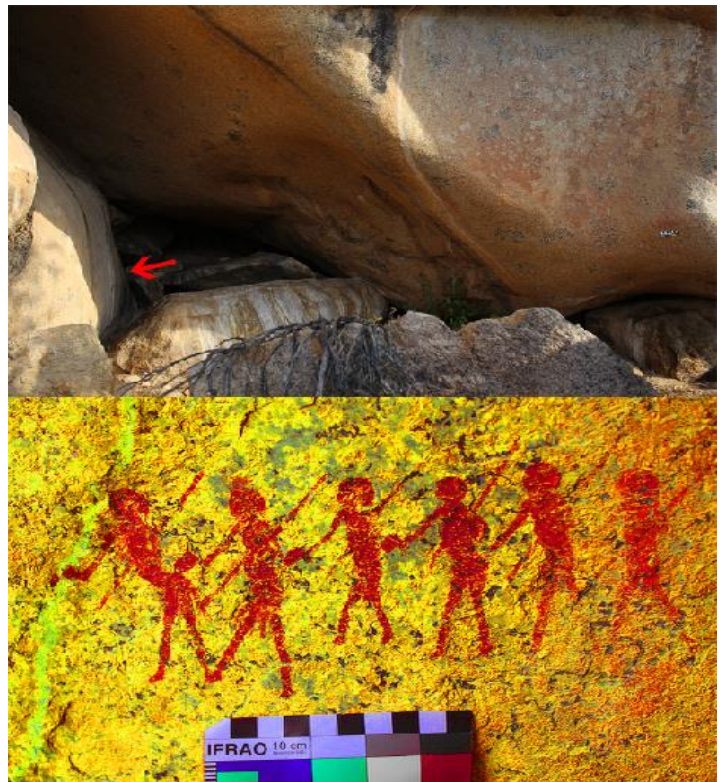


Figure 7.9 Site OWF35. Is another site, with restricted movement. The site is secluded located away from other sites. The figure depicts various human and headless springboks painted in pale red monochrome that are poorly preserved. The site is located at a foot of a hill. All figures at 10cm scale

Figure 7.10 Site OWF55. The top image indicates the location of the painted area on the surface – with restricted movement. The figure depicts a group of six women bearing what appear to be long sticks and some indeterminate objects. They are depicted walking, giving an impression that they walking out of crack. All figures are fully painted in brown monochrome. The site is located at foot of a hill hidden behind Tuba Rock/site OWF50



If we were to accept that 15% of these specific macro landscapes in Omandumba were utilized under this motivation, then this would imply that these sites were chosen deliberately for religious significances and ritual activities associated with the hunter-gatherers' belief systems. Therefore, the audiences of these sites were likely to be the shamans and powerful individuals in the hunter-gatherers' societies who may have served as bridges between supernatural and the living world. It can therefore, be argued that these sites were likely meant to be painted as their geomorphological formations may have embodied painters' and engravers belief system.

Contrary, is the case with sites that host figures placed in deliberate location or rock surfaces that can be seen from those near the site and can be seen from more than 3m to greater than 15m ranges that are classified as 'public art' or public mode of representation (LEENSEN-ERZ 2004: 140 *cf.* HARTLEY & WOLLEY VAWSER 1997:188), which account for 85% painted panels while hosting an excess of 75% of figures. These sites also occupy several topographical locations in Omandumba landscape. However, unlike the very private sites, most of these serves as entry sites in their localities (as they have neighbouring site/panels) but are often in open and can only be viewed by many people at a time – mostly in standing or slightly squatting positions.

The geomorphological surrounding of these sites permit free movement around the site. On the rock surfaces, the artworks are placed at these positions like 1, 3, 5, 6, 7, 8, 10 & 11 (see Fig. 6.71 and definitions in Table 6.7) in the landscape. This phenomenon has been observed for instance at site (OWF09 (Fig. 6.3; OWF12 (Fig. 7.13; OWF39a (Fig. 7.11 & Fig. 7.12) and many other sites in the study. Under the spatial analysis in the distribution of the sites, they were recorded mainly in Class A, B, C, D and very few in Class E. The majority of the artworks are relatively larger and they too interact with the natural formation in the rock surface as well as with the entire landscape features.



Figure 7.11 Site OWF39a shows the group of about 10 people viewing the artworks while ‘standing’ at panel OWF39b. Here, the movement of people is not restricted.

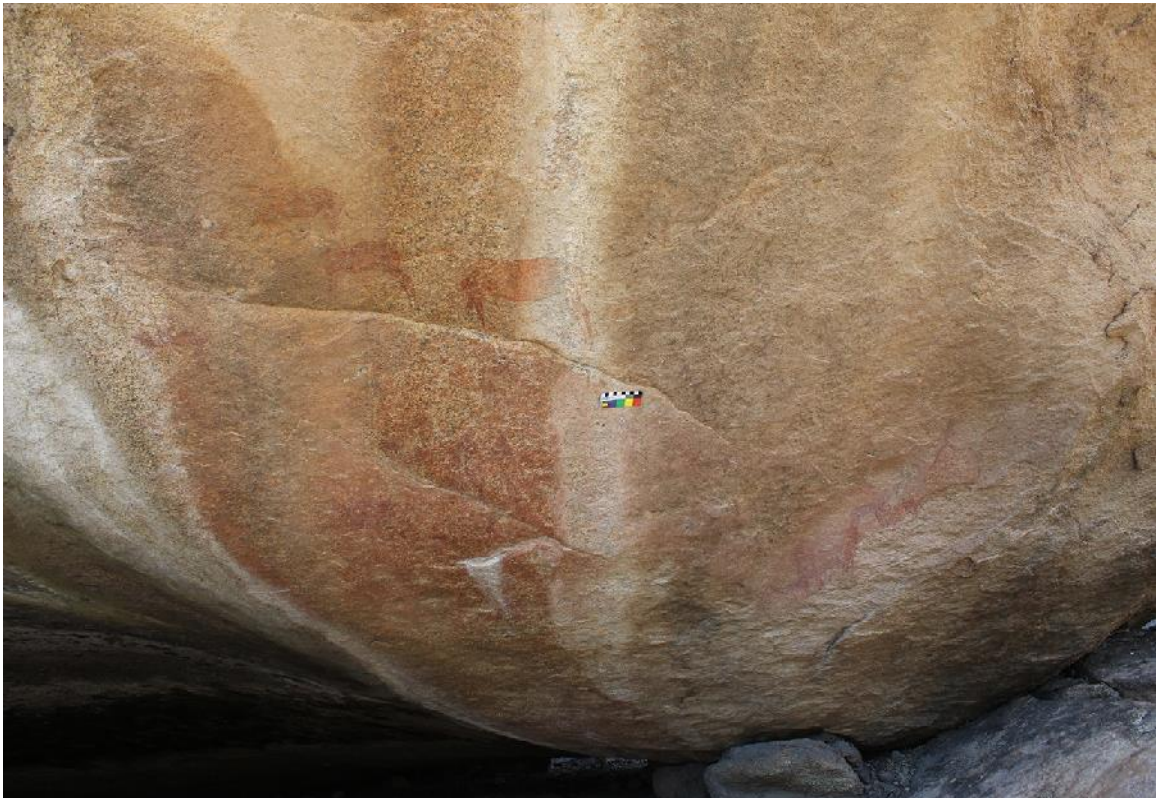


Figure 7.12 Site OWF39a shows figures interacting with the rock surface of the same panel viewed by many people standing at panel (previous figure). The artworks are placed in the middle of the panel.



Figure 7.13 Site OWF39b shows figures interacting with the rock surface while people are viewing the artworks while standing. Figures at the panel occupy the bottom and middle of the rock surface.

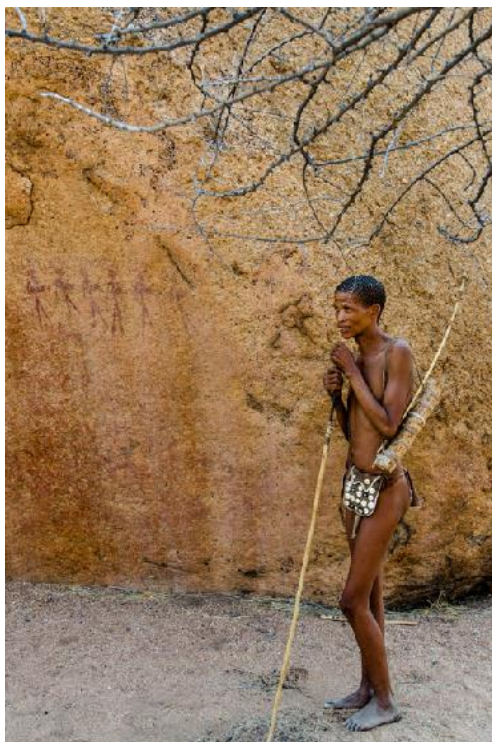


Figure 7.14 Is another example of 'pubic art' at site OWF12 showing a San man from the SLM standing at the site. The artworks are placed in the middle of the rock surface

Detail examination of sites intended for general viewing indicated that the depicted artworks do not only interact with the natural rock surfaces but the artists had deliberately chosen these sites making highly focalized references to vital *in situ* resources that were likely available. Being nomads in nature, it is possible that these sites served as important economic navigational strategies across the landscape to signal availability of food and water resources for otherwise dispersed arid hunter-gatherers. The need to signal social and economic

information to others may well have been focused in locations where groups of people were likely to aggregate – for a range of purposes within a variety of social and economic contexts. For instance, the analyses indicate that these rock art sites are primarily found both on boulders, low cliff faces and granitic walls occupying various topographic configurations with direct access to the open field and are in proximity to natural resources (water and game). Some springs are found at a foot of hills hosting these sites and these too have formed focused locales for occupation and art production. Other less permanent water is found in lower relief valleys where rock pools are formed as a result of seasonal rain.

These rock pools, when full, would have provided semi-permanent water for foragers. Some of the resources are also shown in rock art. For example, depictions interpreted as landscape features such as trees, bees and bee swarms have been placed in localities where even today these features are found. It is possible that these resources may have existed at a time of rock art production considering the climatic stability in this part of Namibia. Even if this is only suggestive, it is highly probable. While investigating rock art in the Branbderg, Tilman Lenssen-Erz also stressed “natural infrastructures remained relatively unchanged from prehistoric times until today” (LENSSSEN-ERZ 2004:136). At site OWF52 and OWF54 for instances, depictions of bees and bees’ swarms corresponds to the bees and beehives found on the tree near the painted panel of site OWF52 and on the same painted rock surface (see Fig. 7.15 & Fig. 7.156). In these scenarios, it is my opinion that painters were most likely painting what they were seeing at that particular time, given how territorial bees are.

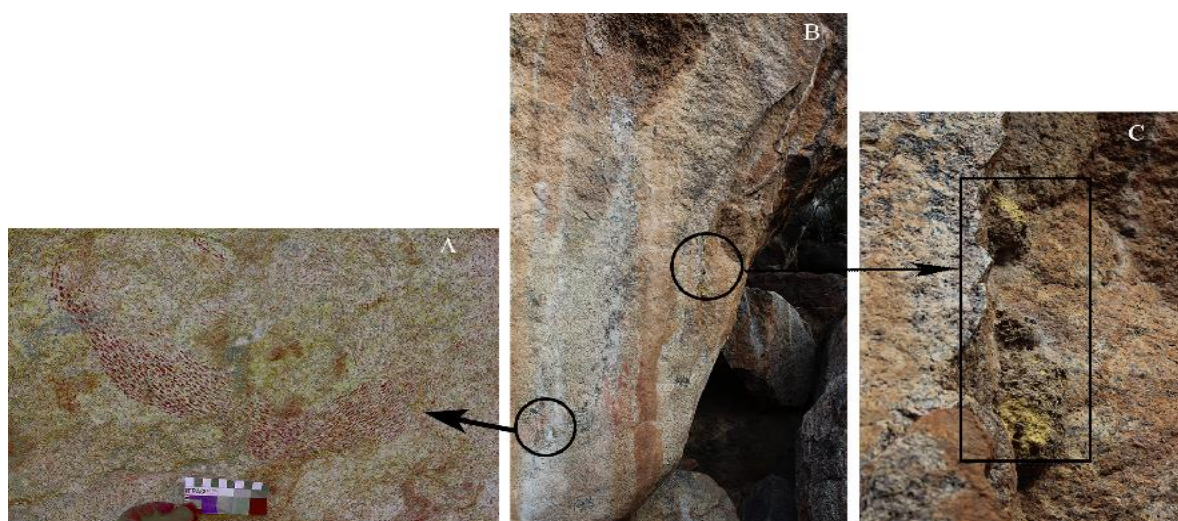


Figure 7.15 Site OWF55. A. Shows painted figure of a dense flock of bees/ bees’ swarms. B. Indicate the location of painted figures and bees’ nests on the same painted rock. Honey many have been an important food source for the hunter-gatherers.

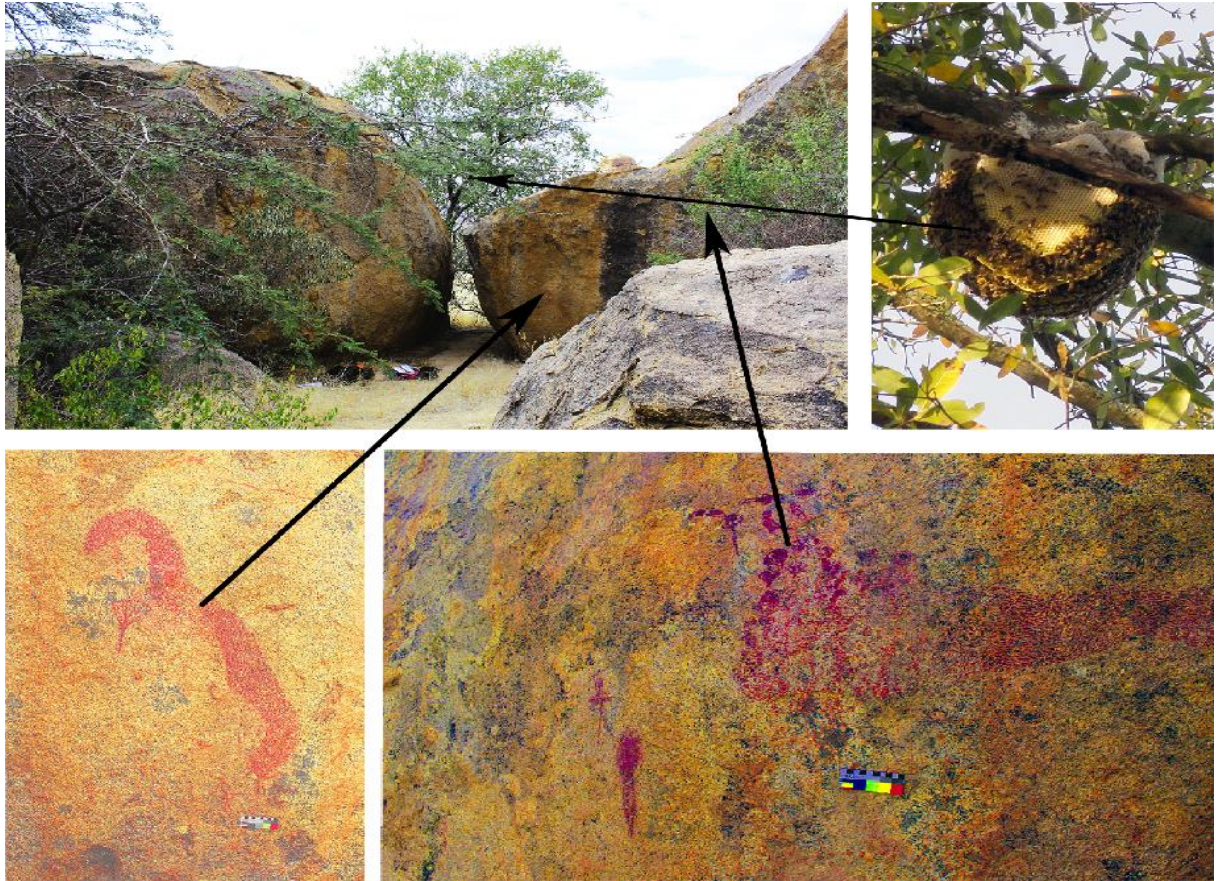


Figure 7.16 Site OWF52b. Indicate the location beehive on a tree in proximity to the painted boulder where figures of bees and bees' swarms are recorded.

Other examples of painted depictions placed in the same localities as their living counterpart in the study are some of the trees' figures, e.g. depiction of what is likely to be a Quiver Tree (*Aloe Dichotoma*) at site OWF39b/ Fackelträger shelter (Fig. 7.17) below.

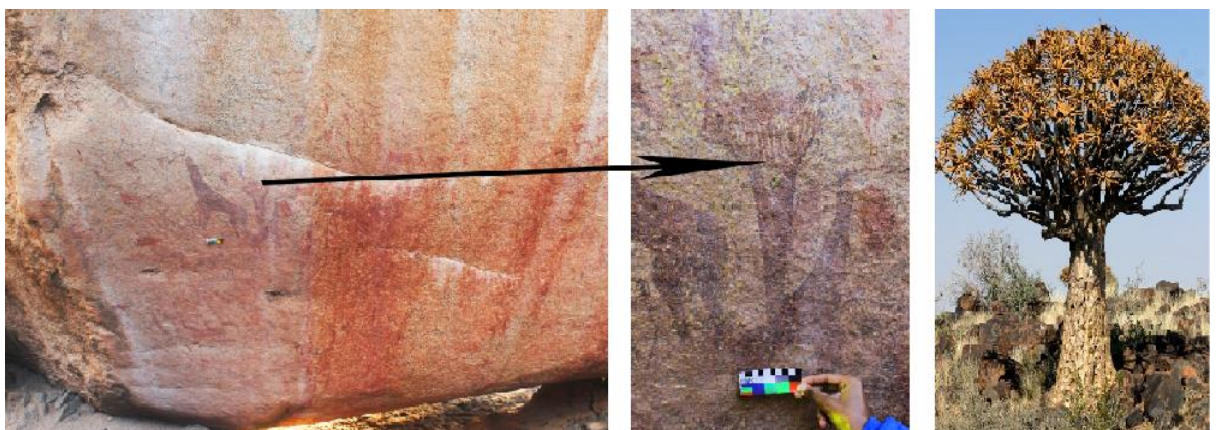


Figure 7.17 Site OWF39b/ Fackelträger shelter. The image on the left indicates the location quiver tree on the panel, while image on the left show an image of a quiver tree found near the engraving site in the study.

The tree is one of the largest and arguably most striking, floral element in Central Namibia. Information obtained from the local San men at the SLM suggests that quiver tree is used to

construct quivers bag for hunters to carry their arrows. They have also reported that since the tree is water retentive, it is an important source of drinking water. It is therefore possible that the tree must have been not only an important water source but also enabled hunter-gatherers to reproduce their hunting equipment continuously. Its depiction at the site must have served as a signal other hunter-gatherers groups of its presence in this environment.

Hunting themes are apparent at all sites deemed public arts in the study. The depictions of entire animal corpus mirrors local fauna found in Erongo even today. Fauna may have been abundant in Erongo given the advantageous configuration of the mountains. The dry-season shelters being located in the north and northwestern mountains range, where Omaruru-River and its tributary springs lies, perhaps provided phreatic water to people and migratory animals that came and went by the season as common large animal species like elephants often migrate along the same lines in the landscape, along natural lines of communication, following dry riverbeds in search of water. These lines of communication would have been important and favourable to hunter-gatherers' migrations between Erongo and other areas such as Brandberg, Spitzkoppe and Twyfelfontein. Therefore, people inhabiting these areas may have appreciated returning animals, thus, resulting the intense ritual activity – art production. If we were to admit that 85% of Omandumba landscape was utilized under this motivation, then this would imply that these sites were chosen strategically for social and economic significances associated with the hunter-gatherers' lifestyle, therefore, the audiences of these sites were likely to be ordinary hunters-gatherers.

Similar pattern in the visibility ratio has also been observed among the engraved panels at site OEF61. The visibility analysis demonstrates that about 46% panels hosting only 14.2% figures are visible from only 1m optical ranges – 'very private'. Here, the artists deliberately place the 'very private' artworks on very dark surfaces producing very little or no contrasts on panels sloping upwards. Unlike painting sites that are placed at concealed locations, most panels hosting these figures are in conspicuous locations. Figures under this motivation occupy the small section of the panel and are either placed individually on the panel or adjacent to other figures but with no clear relation to each other. These panels similarly occupy several topographical locations in the site. Like the painted sites under this motivation, they too do not serve as entry panels to their localities and can only be viewed while squatting and bending directly standing in front of the panel. The figures are placed at these positions 1, 3 & 6 (see Fig. 6.168 and definitions in Table 6.20). However, only few

panels are located at places with restricted movements as many are found at the bottom of slopes. Following figures present some of examples of panels under this motivation (Fig 7.18 & 19) below.



Figure 7.18 show the location of Panel OEF61/03. The panel is slopping upwards. The artwork can only be viewed at squatting position. The figure is seen fading into a small fracture while interacting with the rock surface. Notice that the panel is placed next to 'public panel' OEF61/04



Figure 7.19 Shows the 'hidden' location of Panel OEF61/37. The panel is slopping upwards. The artwork can only be viewed at squatting position. The figure is seen interacting with the rock surface. Notice that the panel is placed next to 'public panel' OEF61/14 and OEF61/15 immediately in front of the springs. Here, the giraffe figure is paired to antelope spoors - no clear relation to each other.

Panels hosting figures deemed 'public' makes up 54% of the corpus while attaining 85.8% of the representations in the study. Panels hosting these figures are placed in conspicuous yet deliberate locations seen from more than 3m to greater than 15m ranges (Fig. 7.20 & Fig. 7.21). These panels are found mostly at the bottom and mid-section of the slopes around the

site. Unlike private panels, they serve as entry panels in their localities and are often in open environment. The engraved representations reveal a lighter colour beneath the panel. Figures at these panels occupy either the entire panel, middle or are restricted at the top and can be viewed by many people at a time – mostly in standing or slightly bending positions. The artworks are placed at these positions like 2, 4 & 5 (see Fig. 6.168 and definitions in Table 6.20). Following are some of the examples of sites under this motivation.



Figure 7.20 Is example of ‘pubic art’ at Panel OEF61/14. The artworks are seen in standing position from a distance. The engraved surface revealed a contrast colour beneath.



Figure 7.21 Is another example of ‘pubic art’ at Panel OEF61/04. The artworks are seen from a distance in the riverbed. The engraved surface revealed a contrast colour beneath.

The data demonstrate that the placement of artworks on those rock surfaces and the overall distribution of the sites in the study was not randomly done. They were placed in these specific locations for significant activities deemed relevant to the hunter-gatherers’ World. Public art was strategically placed in proximity to food resources and water (vantage points),

which would have been ideal places for social interactions while ‘private art’ was equally strategically placed away from public where ritual activities were likely carried out.

Consideration of sites orientations and their exposure to sun had also provided a broad range of rock art interpretation about site choices in the study. The fact that the majorities of painted panels 61% and 50% of engraved panels are oriented easterly has also greatly influenced the visibility of the artworks. The majority of these painted sites are within ‘public art’ and I have observed that these sites get more sun than others and this probably explain why they were highly visible and ideal for habitation unlike ‘private art’ that were oriented southerly and westerly whose visibility where reduced. Due to absence of the sun, these sites were extremely colder and windier than others. Therefore, this analysis has also supported the deliberate selection of sites in their current locations in the landscape.

With the rapid increase of deterioration of rock art sites in Southern Africa including in Namibia, many rock art sites are endangered as a result of increased tourism development, resulting in irreversible damage and loss. It was of utmost importance for this thesis to establish the current state of conservations of the rock art sites, paintings and engravings in the study areas. The condition assessments have pin-pointed two main factors threatening rock art sites in Omandumba farms: natural factors such as rock weathering, biological agents, animal action, normal geological activity, and threats emanating from anthropogenic activities including tourism related activates, dust, acts of vandalism and inadequate conservation strategies used in attempt to ‘preserve’ the sites. The rate at which the paintings are deteriorating is still unknown given the fact that few that previous records by researcher like AbbéBreuil (BREUIL 1960) are inadequate while those collected in 2012 indicated minor changes with slight increase in human vandalism. Since the condition of any rock art site constantly changes, condition documentation enables one to avoid the automatic reaction of presuming that the physical structures of sites are necessarily in decay.

The results from the condition assessment of the sites were uploaded in the rock art-monitoring database of the National Heritage Council of Namibia to enable the responsible institution to make necessary measures towards the management and conservation of the rock art sites.

7.2. Final remarks and future direction for research

The primary objective of this work has been to explore and expand the set of methods and theories from which rock art is studied. The project methodology was structured around the contextual approach of gathering and analysing data, to which a number of landscape approaches were dealt with. Central to this has been to study the sites *in situ*, their distribution in relation to wider landscape features and wider archaeological contexts. New documentation techniques through the use of DStretch and Adobe Photoshop applications has made it possible to see more of the actual figures at the sites and sequence of superimpositions. In this regards, the interpretation of rock art is never better than the documentation. Documenting the sites systematically at various seasons has also allowed researcher to understand changes and landscapes characters, which help us, understand why rock art were produced at the locations they are found today.

When I set out for the field research, I was not only contentedly around the framework of theory and methods of contextual landscape but also understood the importance of processes involved, dialectical relations and experiences. Perhaps growing up largely in the rural village of Namibia and having explored macro landscapes of many rock art areas in Namibia had helped me structure my explorations of this landscape and the rock art by reinforcing my awareness of my own being in the world. This strong existential focus was not foreign to me, and it allowed me to see and experience the rock art in a different manner than had I visited the sites with a mind set on gathering only contextual data. In becoming more aware of the micro landscape of this area, and of the ways in which those miniature landscapes have been incorporated into the rock art to become the backdrop of their micro topography, through the figures and artists' deliberate manipulation of place, I have come to realize that the rock art also has a strong existential focus - the relationships between people and the rest of the world. As I pondered my own being in the world at the rock art sites, I recognize that the rock art is in part an exploration of the artists' experiences of being in their world as well.

The nature of these interactions with selves and our environment strongly influences our understanding of the world around us. It is possible that these interactions become the basis of metaphors, which in turn developed the fundamental concepts of time, space and knowledge. By understanding this, and by acknowledging that the conceptual system of hunter-gatherers was radically different from that of my own, I began to bridge the gap between the two

through the process of exploring the various physical contexts in which Omandumba rock art sites are found, and by considering the effects of these contexts.

First, it was possible that the engravers and painters were concerned with the way visitors accessed and moved about rock art sites. This is demonstrated by the frequency with which certain elements appear and reappear in this tradition. Artworks placed ledges/sills and those placed in concealed locations for example, restrict people's movement; while at the same time provide a convenient place to stand, sit and squat while viewing the figures. Figures placed on cliffs and up hills were often chosen, requiring the visitor to climb, frequently risking life to experience the rock art intimately. These and other elements were probably sought by artists, who spent time looking for places with just the right collection of physical elements which would provide the specific viewing and access conditions they desired; these conditions would provide a context for the art they wished to produce. By controlling how the rock art was experienced, the artists in turn could control the "consumption" of the rock art, even in their absence. They could ensure everybody was able to access the painted or engraved panel, or restrict access to a select few. It is possible that they ensure that their sites were passed by other groups of travellers following natural routes through the landscape, or hide them way in incongruous places, thereby making a visit to them the goal of a dedicated journey.

All these elements had meanings, which started with basic sensory-motor experiences, and perhaps ended with social or cosmological implications. The recognition of these experiences, of the fact that the artist had some control over them, and of the probability that they affected the visitors' understanding of the figures, are important elements to bear in mind as the implications of this research enquiry are explored. This is made more clear when I considered the surfaces on which the rock arts were placed. It is therefore safer to suggest that that rock art sites were placed in their current locations in relation to the value of the local area for resource procurement. The study area was probably not an easy place in which to live, but it is reasonable to assume that during the need for social and ritual communication equally pressing like utilitarian needs, and therefore, some rock art point to its ritualized context, hence, the driving force behind the production of rock art was largely ideological and economic. Local flora and fauna have also played a significant role of the environment of Erongo rock art, are depicted at many sites.

In conclusion, I would like to point out that Erongo Mountains are one of the key rock art areas in Namibia that cannot be completely understood from the scope of this study. There remain several issues that require further and in-depth study including continuous archaeological research that focus on establishing the chronology of the rock art through pigments analysis along with examining other archaeological materials recovered from excavations as well as continuous archaeological investigation of sites identified in the study to have potential for further research. The study however, has demonstrated that the Omandumba has a potential for providing absolute chronology of the rock art based on the set of organic pigments albeit in small quantity collected from some painting sites as well as relative chronology based on superimpositions of both engravings and paintings. This study, however, has contributed to the general knowledge of the rock art corpus of the Erongo Mountains through an empirical documentation of the rock art and its associated archaeology as a first step.

Given the severe shortage of qualified archaeologist in Namibia, the study has also demonstrated that research of this nature can only be achieved when local heritage institutions promote and create avenues where collaborations with various research institutions, universities and the involvement of local communities around the sites is encouraged.

7.3.Management Recommendations

It should be universally accepted that the archaeology and cultural heritage presented in Omandumba farms and Erongo Mountains in general is of outstanding value to humanity. Thus, all of our intervention on the sites should be of similar outstanding quality and pay homage the intellectual and spiritual status of the prehistoric people who lived at and created artworks at this place before us. Below are some of identified several recommendations for the management of rock art sites on Omandumba as a result of this research project. The recommendations relate to all the preservation efforts of Namibia's rock art and are based on the following categories: monitoring sites; current status; hiking trails; paths and campsites; visitor centre; training outreach and community involvements.

7.3.1.Monitoring

Monitoring is a crucial step in any management process as it enables the responsible institution (NHC) to determine causes and rates of rock art deterioration derive a prognosis

and develop appropriate conservation strategies for sites. Monitoring is thus an indispensable tool in their attempts to minimize or mitigate site damage. Rock art sites in Namibia have to endure with obstacles of the non-existence of prerequisites strategies such as site management plans (according to National Heritage Act No. 27 of 2004 Standards); capacity of NHC to manage sites; and the lack of funding to support monitoring programs. Since 2012, monitoring program under the Department of Archaeology and Heritage Research has been in existence at NHC. However, such program is growing at slow pace given the fact that its carried out by one rock art specialist and fact that the available resources are usually tailored for existing sites already enjoying legal protection as per National Heritage Act No. 27 of 2004 and very few sites receiving significant number of tourists like Omandumba farms. The program monitor at least 2 sites annually but depending on the availability of funds and emergency situations such as fire outbreaks, earth tremors etc. In Omandumba farms for instance, condition assessment was first carried out in 2012 and had emphasized sites of high density and sites receiving significant receiving most tourists including OWF09, OWF10, OWF11, OWF12, OWF17, OWF18, OWF39, OWF50, OWF52, OWF56 and OEF60. Most of these sites are located near farm roads and trails susceptible to human damage therefore; high priority is always given to them. It therefore envisioned that such monitoring activity is repeated every 3 years.

7.3.2.Site Management Plan

According to the National Heritage Act of Namibia (NHA) standards, every rock art site opened for public should be comprehensively recorded with a site management plan to sustain the site as a long-term future as a cultural attraction (National Heritage Act No. 27 of 2004, sections 58). The management plan should ensure, among other things, that regular and continuous condition monitoring is conducted. It is only after the guarantee that these conditions have been fulfilled that a site can be formally registered with the National Heritage Act. It is envisioned that the next step after this based line research that all efforts will be geared towards developing a management plan of Omandumba rock art sites. The management plan will involves talks with the site custodians (GRN), landowners (Rusts Family), heritage authority (NHC), local community (San people and Erongo Conservation Area Committee), Erongo Regional Council, Omaruru Local authority and rock art specialists. It is proposed that such management plan will be simple and practical with considerations such as: creating site information, addressing some farm roads in proximity to

sites, creating and maintaining existing paths, removal of camp sites in extreme proximity to rock art sites i.e. (OWF17 & OWF18), suggestive of suitable time to view the sites to avoid visitors pouring liquids to improve visibility of figures, regular training of local guides, access to the site and number of people allowed at each site, marketing and raise awareness of the present state of heritage and promote public understanding of Namibia's heritage. The National Heritage Council of Namibia and the Rust Family will administer the management plan.

7.3.3.Current status

The physical and biological condition of paintings, engravings and archaeology of Omandumba varies from bad – very good. Visible human damage is relatively minimal with the slight insensitive of the tourism development at sites OWF17, and OWF18, that has been transformed into camping site, thus reducing the archaeological value of the sites. The management plan will therefore encourage proper consultation and heritage impact assessment, in accordance with the National Heritage Act No. 27 of 2004 before tourism related development are carried out near rock art sites in farm. It is therefore recommended that:

- The camping site be clearly removed and relocated to a distant where it does not threaten the existence of the paintings nor site setting.
- A proper information/ signboard is erected notifying the campers of the existence of the paintings and emphasizing the importance of such archaeological artefacts in Namibian pre-colonial history.

7.3.4.Hiking Trail and Paths/farm roads

In general, hiking trails in Omandumba farms is not a problem given the fact that visitors are properly supervised and guided to sites open for public. Though most of the tourists are sensitive to proper etiquette, some damages have occurred. For example, at Elephant Wall/site OWF56, graffiti in form of charcoal drawing have been recorded on the painted wall. It will, therefore, be proposed that warning signs against vandalism will be erected at these vulnerable sites including the engraving site. Some of the paths and farm roads in Omandumba West farm are not in good condition. Most of the paths and farm roads go or pass directly to rock art sites, which not only encourages physical contacts with the painted

figures for example at Porters Boulder/site OWF09, OWF10, OWF11, OWF50 and site OWF52 but also increases dust accumulations onto painted rock surfaces emanating from dust kicked up by visitors to the site, from vehicles driven too close to the sites and dust blown up by wind. The recommendation will therefore include issues such as:

- No vehicle can be driven up to the site. Visitors have to walk the last 100metres to the site. Clearly delineated pathways need to be laid down.
- The signposts inform visitors that no one is allowed to visit the site without a guide.
- An information signboard notifying the campers of the existence of the paintings near hiking trails and emphasizing the importance of such archaeological artefacts in Namibian pre-colonial history. Such a board will carry the message cooperative heritage conservation and sustainable use among the camping site.
- Physical improvements: Creation of walking paths, information boards, interpretive panels and warning Signage, iron or wooden barriers to vulnerable sites, i.e., site OWF39, OWF50, OWF52, OWF09, OWF11 and OWF56. Leaflets and brochures outlining the cultural importance of the site will also form part of the restoration measures.

7.3.5. Development of a visitor centre

There is no existing visitor centre in Omandumba farms. It is therefore proposed that a possible visitor centre be developed either near the road to the San Living Museum or near Omandumba West farmstead. The visitor centre should have information about the sites, maps of sites open to public only, the farm's information, map of the camping sites, which also indicates some of the activities that visitors can do in the farm such as sun set viewpoints, water points for animal viewing, birds watching etc. Perhaps small shop serving day visitors since the farm is located in proximity to the well-known D2315 main road connecting the west coast.

7.3.6. Training and Outreach

Omandumba farm guides (local San people from the SLM) are generally helpful especially with regards to the indigenous knowledge about the local flora and fauna as well as meaning and identification of many painted and engraved figures. However, they too need to be

informed about the danger of erecting small fires inside painted shelters for demonstrations to tourists or even coming into physical contact with the paintings as it has been observed during the past three years of this research. Clearly, this is stem from goodwill, but such matter can cause physical damage to the paintings. Perhaps, the training outreach should also include some guiding etiquettes and pay particular attention to the ratio of guide/tourist, which is eight (8) at all, rock art sites in Namibia (depending on the geomorphology of site though).

7.3.7. Recognition of local protection efforts

Although all rock art sites in Namibia whether found in private and state land are automatically the properties of the Namibian government according to the Section 54 & 55 of the National Heritage Act No 27 of 2004; the NHA does not legally recognise the local means of management and conservation of heritage sites even though some of the sites have been properly been taken care of by the local community in proximity of the sites, as it is a case with Omandumba. It is therefore proposed that amendment to the NHA legislation is necessary in order to effectively address this problem and it is hoped that Omandumba farms will serve as the first case study in this scenario so that they are empowered to continue looking after the sites as they have been doing it for years.

7.3.8. Legislation of Omandumba archaeological heritage in Namibia's National heritage register

It is according to the National Heritage Act of Namibia (Section 29, 30 & 35) standards, that before heritage sites are nominated as national heritage sites that all scientific study of the sites be completed and publications made available with a comprehensive site management plan. It is therefore projected that after completion of the Omandumba management plan, the farm will be nominated as national heritage site as per NHA No. 27 of 2004 and all the site information will be included in the national heritage database of cultural sites in Namibia.

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APPENDICES

Appendix 1: Rock Art Survey & Recording Form

ROCK ART REGISTRY FORM

NATIONAL HERITAGE COUNCIL OF NAMIBIA DEPARTMENT OF ARCHAEOLOGY & HERITAGE RESEARCH



LOCALISATION

Project Name:	Region:	Surveyor (s):
Site Owner:	Date:	Time:
Site name:	Recorder (s):	Legal Status:
GPS coordinates:	Sheet No:	Altitude: Meters
Maps:	Scale:	

Nature of Access to Rock Art Area (Please tick appropriate box)

Open Access	<input type="checkbox"/>
Private Access	<input type="checkbox"/>
No access	<input type="checkbox"/>

SECTION A: LANDSCAPE CONTEXT OF THE SITE

GEOLOGICAL SETTINGS:	X	COMMENTS	ECOLOGICAL SETTINGS	X	COMMENTS
Rock Types			Vegetation		
Granites Basalt Sandstone Schist Others_____	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		Wooded Bushy Thorny Grassland Others_____	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
Landscape Situation	X	Comments	Fauna Type	X	Comments

Outcrop Pavements River bed Hill top Valley flat Plateaux Mountain	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		Wild Animals Domestic Animals Others.....	<input type="checkbox"/> <input type="checkbox"/>	
SITE ENVIRONMENT	FILL IN	COMMENT	EXPOSURE TO SUNLIGHT	X	Comments
Site/Panel Size Length Width Painted area	 _____ _____ _____		Morning Afternoon All Day	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
PLACEMENT OF FIGURES		SITE VISIBILITY (m/km)	ROCK SURFACE		Comments
Open Air Boulder Cave Shelter Ledge/Sill Pavement Riverbed Others_____	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		Vertical Horizontal Sloping Upwards Sloping Downward Ceiling Overhang Ledge/Sill Others...	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	

**SECTION B:
THE CONTEXT OF THE PANEL**

Accessibility to the site:

Date:		Recorders:						Site ID:		
Panel ID	Panel Measurements				Panel Measurements			Optional		
Cluster Number	Distance from Prev. site	Visibility (m)	Proximity to Water Points (R. S. P)	Proximity to Ani. Trails	Elev. (m)	Orientation 1 to 360	Width cm	Height cm	No. of Element	Comments

PANEL DATA: ROCK ART DATA

Types of rock art:

Paintings Engravings Others _____

Paintings: Outline Monochrome Bichrome Polychrome Others ...

Engravings: Light Pecking Deep Pecking Scratched Abraded/Polished Incised Others

Pigment Colour used at the Panel & Quantity

Red Brown Black Yellow White Orange Others

Rock Art Elements

Anthropomorphs Inventory			Total:	Pigment Colours	Photography	
Figure N°	Type of figure	Dimensions (cm) of Figure (L & W)	Techniques of the figure		Camera	No. Of Photos
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						

12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
30							

Indeterminate Anthropomorphic:

Zoomorphs Inventory				Total:		
Figure Nº	Type of figure	Dimensions (cm) of Figure (L & W)	Techniques of the figure	Pigment Colours	Register Photography	
					Camera	Number of Photos
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
30						

Indeterminate Zoomorphic:

Therianthropes:

Other Types of Figures Inventory	Total:
----------------------------------	--------

- a) Phytomorphs
- b) Lineal
- c) Concentric Circles
- d) Cupules
- e) Dots
- f) Indeterminate
- g) Others...

Figure N°	Type of figure	Dimensions (cm) of Figure (L & W)	Techniques of the figure	Pigment Colours	Register Photography	
					Camera	No. Of Photos
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
30						

COMPOSITION

Individual Scenic

The Scene (s) observed at the Site/Panel

Hunting Hunters Birthing Ceremony Cupulation Healing Herds Journey Astronomical Others _____

Elements of Superimpositions at the Panel? Yes No

Superimpositions		Association			Observation:
Figure	Overrides	Figure	Figure	Associated	

		No	No	with		

SITE SURFACE ARCHAEOLOGICAL DEPOSITS

Yes None

If yes, Indicate the nature of Surface finds at the Site/Panel & Quantity by marking X in the space provided.

- [x] [] [] Means "little"
- [x] [x] [] Means "medium quantity"
- [x] [x] [x] Means "a lot"

1. Animal Remains _____
2. Beads _____
3. Ceramic Fragments _____
4. Hearth/ Sediments _____
5. Lithics _____
6. Stone Structures _____
7. Geologic: Ochre _____ Haematite _____ Others _____
8. Pestle _____
9. Grinding Stones _____
10. Others _____

**SECTION C:
CONDITION ASSESSMENT OF THE SITE**

(Please cross X the appropriate box)

Site Setting (weathering processes)	Not Present	Present	Obvious	Dominant
Differential (channels/hollows)	0	1	2	3
Planar (scaling/flaking)	0	1	2	3
Cratering/pitting of a rock art panel	0	1	2	3
Burnt areas	0	1	2	3

Site Setting (biological evidence)	Not Present	Present	Obvious	Dominant
Lichen (crustose) Lichen (foliose)	0	1	2	3
Moss	0	1	2	3
Algae	0	1	2	3

	Grass/turf patches and detritus (leaves/needles) waste	0	1	2	3
Site Setting (Animal Impact)		Not present	Present	Obvious	Dominant
	Droppings (game/stock) of animal waste	0	1	2	3
	Wear (rubbing)	0	1	2	3
	Chips or scratches by animals	0	1	2	3
	Animal blood or droppings on the art wall	0	1	2	3

Site Setting (Human Impact)		Not Present	Present	Obvious	Dominant
	Chips or scratches	0	1	2	3
	Construction near the site	0	1	2	3
	Graffiti (carved)				
	Graffiti (painted)				
	Plough/flail marks	0	1	2	3
	Quarrying	0	1	2	3

Site Setting (Physical and chemical threats)		Not present	Present	Obvious	Dominant
	Water pooling	0	1	2	3
	Water flow	0	1	2	3

Severity of threats

None		Slight Moderate		Moderate		Severe
------	--	-----------------	--	----------	--	--------

Site Setting (geological factors)		Not Present	Present	Obvious	Dominant
	Fissures independent of stone lithification (pressure release, calcrete wedging).	0	1	2	3
	Fissures dependent on lithification (bedding, foliations)	0	1	2	3
	Changes in textural anomalies (banding, concretions)	0	1	2	3
	Rock weakness	0	1	2	3
Weaknesses of the Rock Art Panel		Not Present	Present	Obvious	Dominant
	Fissure soil (future location of break-off)	0	1	2	3
	Plant growth near or on panel	0	1	2	3
	Scaling & flaking (future location of flaking — millimetre-scale, or scaling — centimetre-scale)	0	1	2	3
				
	Undercutting (beneath the panel)	0	1	2	3
	Other concerns (e.g. water flow)	0	1	2	3
Evidence of Large Erosion Events On and Below the Panel		Not Present	Present	Obvious	Dominant
	Anthropogenic activities	0	1	2	3
	Fissure soil/concrete wedging (or dust in fissure soil,	0	1	2	3

	or both)				
	Fire	0	1	2	3
	Construction	0	1	2	3
	Other natural causes of break-off (wedge work of roots, intersection of fractures)	0	1	2	3
Evidence on Small Erosion Events on the Panel		Not Present	Present	Obvious	Dominant
	Abrasion (from sediment transport by water)	0	1	2	3
	Anthropogenic cutting (construction etc.)	0	1	2	3
	Crumbly disintegration (in groups of grains or powdery)	0	1	2	3
	Flaking of the weathering rind (peel off a rock)	0	1	2	3
	Granular disintegration (most frequently sandstone and granitic)	0	1	2	3
	Loss parallel to stone structure (bedding or foliations)	0	1	2	3
	Rounding of petroglyph edges (or blurring of pictograph images)	0	1	2	3
	Scaling (centimetre-scale; thicker than flaking)	0	1	2	3
	Other forms of incremental erosion (e.g. insects, birds)	0	1	2	3
Rock coatings (crust) on the Panel		Not Present	Present	Obvious	Dominant
	Anthropogenic (chalking, graffiti, other)	0	1	2	3
Droppings		Yes / No / Uncertain			
Dust Coatings		Yes / No / Uncertain			
Other Concerns at the Site:					
Overall Condition of the Site/Panel					
Excellent <input type="checkbox"/> Good <input type="checkbox"/> Poor <input type="checkbox"/> Others <input type="checkbox"/>					

PHOTOGRAPHY REGISTRY FORM

Region:	
Site Name:	
Panel No (s):	
Photographer (s):	

Date	Panel Name	Number

Conventional photography record

Caption	Picture number
Panel from N	
Panel from S	
Panel from E	
Panel from W	
Vertical view	
Landscape/context view (indicate direction)	

Panorama pictures

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Stitched filename	
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LOCALISATION		OMANDUMBA Rock Art Database		Engravings		Other Components			
Region:	<input type="text"/>	Landscape Cont...		Light Pecked:	<input type="text"/>	Style Count:	<input type="text"/>		
Site Owner:	<input type="text"/>			Orientations:	<input type="text"/>	Deep Pecked:	<input type="text"/>	Superimpositions:	<input type="text"/>
UTM Easting:	<input type="text"/>			Location:	<input type="text"/>	Scratched:	<input type="text"/>	Pigment Analyses	<input type="text"/>
UTM Southing:	<input type="text"/>			Positions:	<input type="text"/>	Abraded/Polished:	<input type="text"/>	Associ. Archaeo:	<input type="text"/>
Site Name:	<input type="text"/>	Distance From:	<input type="text"/>	Others:	<input type="text"/>	Archaeo Recomm:	<input type="text"/>		
Panel ID:	<input type="text"/>	Quantity		Paintings		Anthropic Actions:	<input type="text"/>		
Elevations:	<input type="text"/>			Painting Type:	<input type="text"/>	Animal Impacts:	<input type="text"/>	Biological Impacts:	<input type="text"/>
Site Context:	<input type="text"/>			Colour (s):	<input type="text"/>	Chemical Impacts:	<input type="text"/>	Overall Conservat:	<input type="text"/>
				Black:	<input type="text"/>	Sites Open to Public:	<input type="text"/>	Mana. Recommenda:	<input type="text"/>
		Brown:	<input type="text"/>	Red:	<input type="text"/>	Site References:	<input type="text"/>		
		White:	<input type="text"/>	Yel/Oran:	<input type="text"/>	Comments			
		Elements		Anthropomorphs:	<input type="text"/>				
		Element Count:	<input type="text"/>	Zoomorphs:	<input type="text"/>				
		Total Elements:	<input type="text"/>	Therianthropes:	<input type="text"/>				
		Painting Count:	<input type="text"/>	Phytomorphs:	<input type="text"/>	Comments			
		Engravings Count:	<input type="text"/>	Abstracts:	<input type="text"/>				
				Indeterminate:	<input type="text"/>				

Appendix 2: Template of Omandumba Rock Art Database Entry Form.