



Fragments of the Hunt

Persistence Hunting, Tracking and Prehistoric Art

Mikko Ijäs



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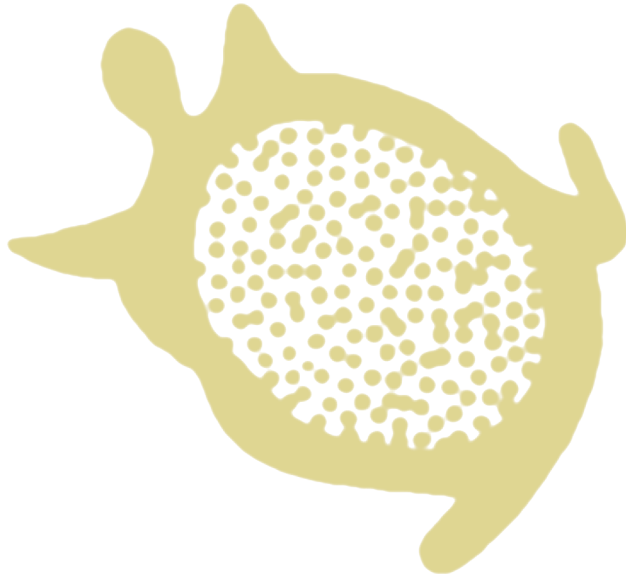
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For my dear boy

Oskar

The ideas presented in this book
would not exist without you





Acknowledgements

It was on a nice summer day in 2009 when my phone rang and my professor Teemu Mäki asked if I was willing to go to Namibia to participate the Tulipamwe artists workshop. I had five minutes to answer, whether I would be able to go there on a very short notice to spend a few weeks in a Herero hut with a group of international and local artists and make new art and be part of exhibitions in Windhoek, the capital of Namibia. Teemu knew that I had always been interested in African culture. I was only three months old when my family moved to Nigeria and we spent two years over there on two different occasions and moved back to Finland when I was four. Our magnificent collection of tribal masks and other memorabilia from Nigeria were a big part of my childhood and I spent years devouring the picture books depicting tribal customs that were extremely exotic for a Finnish boy, but at the same time, I felt home with them. I am thankful for my parents for this great gift. I am especially thankful to my mother Eva Ijäs who has always done her best to support my ambitions.

I am very thankful for Teemu for this chance he gave me. During this trip I met plenty of interesting people. First of all I was introduced to South African born Andries Fourie from Salem, Oregon, who has played a major role in my life ever since. We shared a traditional Herero cow-dung hut for three weeks and became close friends. I also met South African born Namibian artist Nicky Marais, who has become equally close to me. She was extremely delighted when she learned that I was interested in Southern African rock art and she promised to take Andries and I to see some of the Namibian sites if we would be able to come back and have an exhibition with her.

In May 2010 Andries and I travelled back to Namibia to have an exhibition and then head off to the desert to find rock art. I was a physical wreck at the time and the few days we spent camping in Damaraland were extremely difficult for Andries and I. Despite the physical toll it had on us, we still managed to see the painting known as the White Lady on the foothills of the magnificent granite massif commonly known as the Brandberg. We also visited the rock art site known as the /Ui-//aes (Twyfelfontein) and it was there that my fascination on animal tracks on ancient rock art was born.

On this trip I also had a chance to become more closely acquainted with Nicky's family, and all of them have become close and dear to me, especially her husband Martin Harris and their amazing daughters Tessa and Helen. A year later, in May 2011, I made another holiday trip to Namibia with my wife Maija and my six month old baby son Oskar, and Nicky and her family kindly welcomed us to stay at their

astonishing place in Windhoek. We all welcomed the Namibian sun after a long, dark and cold winter we had spent in Finland trying to adapt to our new life as a real family with a baby. During this trip I escaped for a two-day excursion with Nicky to explore the then remote and fairly unknown cave painting at Wüstenquell farm. This trip was also the last one when I had a chance to spend time with Nicky's adorable mother Christine Marais, who passed away not long afterwards. Christine was an astonishing artist with amazing skill to paint from live subjects. She is considered to be one of the most important artists of Namibia and she's mostly famous for her meticulous studies of Namibian desert landscapes and its delicate flora. We all miss her terribly.

Nicky, Andries and I all wanted to get together again in May 2013 and we met in Nairobi, where Nicky's friend Peter Bateman hosted us for about two weeks and we had a chance to make a trip over the Ngong Hills to visit the Olorgesailie archaeological site at the floor of the Eastern Rift Valley in southern Kenya.

IN MAY 2012 I was concerned about getting a good pair of summer shoes for my almost two-year-old son. I noticed that he was much more able to move around without any shoes on. My friend Sebastian Forss told me that people had begun running without shoes and their running had improved drastically. As I did some preliminary research on this notion, a quick internet search revealed a whole world of barefoot running to me.

I had never been interested in any sports, but as I dug deeper, I found that there was a plethora of convincing arguments to support barefoot running. Quite soon I realized that barefoot running was also closely linked to my zen practice and to my research on Southern African Rock Art, which I had put on hold when my son was born. I had never paid any serious attention to the hunting methods of the Kalahari San before this. I instinctively knew it was important, but I could not find a clear explanation of just how it was important. I soon found out that there was a South African renegade anthropologist named Louis Liebenberg who had witnessed San people run down antelopes and kill them without any complicated weapons. He had also helped a BBC film crew to document such an event, which was available online.

I also learned about the work by Harvard paleoanthropologist Daniel E. Lieberman, who claimed that adaptations that enabled endurance running are the most distinctive elements of our physiology. I immediately wondered why, if humans were born as running animals, I could not run. I had always hated it, and only two years earlier I had suffered terrible knee pain from only beginning to run. Slowly I began to run, but this time I did it with Vibram five fingers, which are like of foot gloves with individual pockets for each toe. I suffered a minor injury soon after, but as I was recovering I read Christopher McDougall's best seller "Born to Run", which is more or less the reason why running barefoot has become such a phenomenon. As I recovered from my injury I began running completely barefoot and I could see and feel how my body slowly but surely adapted to it.

Only a while later as I was searching for some cold weather solutions for myself and my son, I came across an Oregon-based small moccasin factory called Soft Star

Shoes. Ever since then, they have been amazingly supportive of me and my work. They also led me to contact Ted McDonald, also known as Barefoot Ted, the president of the Luna Sandals in Seattle. Ted soon became a huge source of inspiration for me as I slowly reclaimed my deteriorated health.

My research on the ethnographical material on the Kalahari San-people took a completely different turn due to my interest on their hunting methods, especially with regard to running and tracking. From May 2012 to October 2013 I just kept reading about long distance running and its relation to ancient survival skills. In 2013 I realized that Louis Liebenberg's account on his experience of transforming into the animal he was running down had to be important. I thought that if people experienced this kind of altered states experiences while running down antelopes it had to be important. People had studied the physiology of running, but the psychology of running seemed equally important. If people had run down antelopes for more than two million years and experienced these transformative hallucinations, it had to have a deep impact on these people. That was when I realized that all those half-human half-animal figures that penetrate all ages and distances in rock art could be linked to these experiences. After all, they were all possibly running down animals, as they did it for their very survival. I only needed to interview someone who had done it, but it appeared they were all gone.

In January 2014 I gathered my courage to ask for assistance directly from Liebenberg. He has been very helpful, supportive and encouraging towards me and my work ever since. As it happens the political situation had turned very bad for the San in Botswana and going there was out of the question. Nicky helped me to get in touch with the NNDFN (Nyae Nyae Development Foundation of Namibia) who assisted me in getting a research and filming permit for the Nyae Nyae Conservancy in December 2014. As my planning progressed I was kindly assisted by the wonderful Sebastian Dürschmidt from the LCFN (The Living Culture Foundation Namibia) who helped me with my travel arrangements.

In late 2014, my persistent wife and I spent a week living in //Xa/oba village within the Nyae Nyae Conservancy about 25 kilometers north of Tsumkwe in Namibia. The Ju/'hoan hunters were extremely interested in my work and ideas. We spent our days tracking in the bush and we also slept on our tracks as we followed our prey. Additionally we spent time learning traditional crafts such as making ostrich egg shell beads, and I managed to make myself a bow and arrow hunting kit and learn how to collect materials for friction fire. Three members of the village, Kxao, Komt-sa and their manager !Gamace N!aici spoke English and we had no real issues with communication. Especially Kxao became a very close friend to us and our lengthy conversations varied from hunting and tracking to how he was bullied by the Hereros when he tried to go to school in Tsumkwe. It appeared that many of the things related to animal transformations, the connections between hunting and their ceremonies were all everyday knowledge to them. I found it striking that these connections had not been made previously.

After that we spent about two weeks touring around Damaraland and Erongo region with Nicky and we were kindly assisted by many helpful individuals, including

Nicky's whole extended family and friends, such as archaeologist Goodman Gwasira from UNAM (University of Namibia), Deike and Harald Rust from the Farm Omandumba West, and Harald's close relative Oliver Rust, who now runs the Wüstenquell Farm together with his lovely wife Verena.

AFTER OUR TRIP to Namibia, we published a short trailer from our film "The Origins", which is an abstract silent documentary film with music composed by my wife Maija and is loosely based on the concepts of this book. I decided that it was necessary to include the Mexican native runners, the Rarámuri in our film. It had been my dream to go there ever since I had read McDougall's book, but it felt like it had not been directly linked to my work. As I was planning the trip it turned out that Barefoot Ted wanted me to visit him on my way and see the new Luna factory in Seattle. I also went to visit my dear friend Andries and his wonderful wife Annabel, who took me to an amazing road trip to see the desert and rock art of southern Oregon. I also had the chance to see the lovely staff of the Soft Star Shoes in Corvallis, Oregon.

Ted and the whole crew at Luna have become my biggest and most audible supporters and I am truly grateful for Ted for his inspiration. I am also grateful for him and his amazing wife Irem Guroglu for their hospitality as they invited me to visit their home in Seattle on my way down to Mexico in early 2015.

In Mexico I wound up in the middle of a prolonged cartel war and the famous Caballo Blanco ultramarathon I was there to participate and document had to be cancelled. The local violence spurred a huge sense of unity and the sense of being one for peace and our international group bonded like we were all one. I will never forget it. I am extremely thankful for all the amazing people who helped me over there, especially the race directors Maria Walton, Josue Stephens and the members of the NGO Norawas de Rarámuri François "Flint" Bourdeau and Michael and Kimberly Miller. Many of the friends, including Shalini Kovach, Cherie Yanek and Don Winkley, I met in Mexico ended up providing some insights of altered states experiences during ultramarathons. This field has been very seldom studied and no real scientific papers exist on this area. The interviews on this matter was deleted from the final manuscript due to the demands by my preliminary evaluators.

Since 2005 I have been privileged to be influenced by the Finnish philosopher Pentti Määttänen, who has also been my tutor throughout the whole process, reading several versions of this book and correcting my thinking along the way. He has always been there since I was accepted to the doctoral studies in 2007. Together with Pentti and artist and researcher Mika Karhu we have spent countless hours debating on art, philosophy, sociology and neurosciences. A huge thanks for your persistent efforts on my work. Mika has also been a good friend and his challenging ideas have continuously formed my thinking and encouraged me to participate in courses on neuropsychology and cognitive sciences at the Helsinki University.

I would also like to give big thanks to Aalto University for providing me with this opportunity and also some of the funding. Especially I would like to thank the skillful staff of our library who have been extremely helpful providing me with tons of multidisciplinary journal articles and books.

As I was trying to get my materials together in May 2015 I was suddenly helped by many astonishing individuals. Tilman Lenssen-Erz provided me with tons of useful information and reproductions of Namibian rock paintings.

Anthropologist and writer Peter Nabokov was kind enough to clear few minor details related to Native American running traditions. Ski historian and film-maker Nils Larsen clarified the most intriguing aspects of the Altai skiing hunters by sending me his fantastic movie and a rare Chinese publication on the subject. Art historian Esther Jacobson-Tepfer from the University of Oregon also clarified some details relating to rock art in the Altai area. A lot of this material was eventually deleted from the final draft.

I would also like to thank R. Dale Guthrie for allowing me the privilege to use some of his illustrations in this book. Guthrie's very ambitious book "*The Nature of Paleolithic Art*" (Guthrie 2005) presents a fresh approach to several issues around rock art and their interpretation

The chapter dealing with the skiing hunters of the Altai mountains in Northern China and their possible linkage to the Ice Age hunting methods was inspired by a blog entry by Finnish author and rock art scholar Jukka Parkkinen, who also provided me with a one photograph from Alta, Norway for this book, which I failed to take myself, since this rock engraving in Alta was not painted when I visited the site and it was invisible to the naked eye. Another Finnish rock art scholar, Ismo Luukkonen, has been a constant inspiration for my research as he continuously publishes tons of great photographs on his Facebook site Rock Art Finland. He was my photography teacher in early 2000s in Turku Arts Academy and he also has provided me with a photograph from northern Russia for this publication. He also gave me astonishingly accurate maps for our trip to Northern Norway, for which I am truly grateful. Unfortunately this entire chapter was deleted from the final manuscript due to the demands proposed in the preliminary evaluation process.

In the early July 2015 the first complete draft of this manuscript was finally ready. I shared it with my tutor Pentti Määttänen, theater director Raila Leppäkoski, professor of evolutionary paleontology Mikael Fortelius from the University of Helsinki, and of course my dear friend Andries Fourie. All of them provided me with hope and plenty of educated advice on how to further edit and enhance my work. Andries also provided colossal help with the language of this book. I am extremely thankful for their help.

Many individuals and institutions have provided me with encouragement and materials. I am deeply grateful for David Lewis-Williams and the Rock Art Research Institute at the University of the Witwatersrand in Johannesburg, South Africa for providing me with kind words, support and images for this publication. I am also in debt for the archeologist Kurt Wehrberger, who is the director of the Ulmer Museum in Ulm, Germany who provided me with important new information and pictures of the Lion Man statuette. I was also extremely happy to receive help from Jean Clottes who was kind enough to provide me with images from the Chauvet Cave. I am also very grateful to Frédéric Placard for providing me with a great photograph of the Rouffignac Cave.

A very big thanks also to my preliminary examiners philosopher Risto Pitkänen and artist/philosopher Kimmo Sarje who sacrificed a lot of their precious time for their critical evaluations, which provided me with a fresh look towards my initial manuscript. My deepest gratitude also goes to professors Ossi Naukkarinen and Juha Varto who both offered their kind assistance and helped with the final stages of this process.

MY BIGGEST THANKS goes to my dear wife Maija and to our lovely son Oskar. My wife has been my greatest supporter and compassionately listened to my manic rants. She has always welcomed me with loving arms when misfortune struck. I would never have had the courage to venture into the scientific world without my wife's emotional and financial support. When we had our son, we decided take as much time off as we could and not put him into daycare until he was three. It was the best decision we have ever made. I had a chance to have a long break from my day-to-day toil and distance myself from my previous disposition. Because of this, I accidentally found a completely new approach to my work through running and all things related to it.

Having a child taught me one important thing: parents need to be fit and able to protect, help and raise their offspring. Since I began running I have also been training on practical natural movement skills such as swimming, climbing, throwing, etc. I have also studied wilderness survival skills and always camped outside. This has drastically decreased my travel expenses. My sponsors at the Marttiini Knives, Gerber Gear and Mökkimies also deserve their thanks for providing me with gear and gifts for my travels. My dear brother Jan Ijäs has also continuously supported my endeavors as an aspiring film-maker, which I am immensely thankful.

I would have never completed this research without all these wonderful people helping me along the way. I probably forgot to name many important individuals, but if you were there to help me, please accept my apologies and my deepest gratitude. Thanks.

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Prologue

One of the most intriguing questions we humans could ever propose is why we started making images that represent the world around us or some other symbolic meanings? I doubt that we will ever find a final answer to this question. However, we do have plenty of good theories about what the early images depicted. Actually, there is not even a clear idea where that practice began. The evidence of the earliest examples are found on rock shelters, caves or buried in sediments, but the natural elements have destroyed most of the evidence, so we are left with few examples of early practices that could give us some idea as to the original reason for their production. But as more evidence is found, we are usually faced with a clean slate, and once more we have to reevaluate our prior theories.

One of the aspects that makes the whole issue so daunting is the fact that we are physically identical to prehistoric people. Therefore, it seems ridiculous that we still cannot grasp the spark that ignited these practices. But their lives, and the world around them was completely different. Although they were physically the same, their lives were totally different. Therefore, their conscious minds must have been a bit different as well.

Actually, can we make any conclusions from our standpoint? We are generally doing pretty badly in our own world. We are polluting our nature, exploiting the poor, and spending huge amounts of resources to fight diseases that are actually self-inflicted. No matter how much data and knowledge we accumulate we are still occasionally acting against our reason, believing we are doing the right thing. We are clearly stupid creatures. We are obviously in a position where we should reconsider our own capability for any kind of reasoning.

Humans have been here for about two million years, if we count our first *Homo erectus* ancestor as being human. Their bodies were the same as ours, only their brain was a bit smaller. Our own species has been here for about 200,000 years. But the first signs our image making are only about 35,000 years old. Agriculture began after the Ice Age ended about 10,000 years ago, and few thousand years later we begin to have written records describing the lives of these people. But the whole history of our own species is based on the small fragments we have.

The best thing we can do is to try to imagine the physical activities these people had to endure in their daily struggle for survival. Somehow they survived and even flourished. We are a living proof of the fact that occasionally these creatures were skilled enough to exploit the resources of their environment to such an extent that they were able to survive and have babies. *H. erectus* adapted to thrive in their environment. Something they did to exploit their resources made them more fit to pro-

create. Although there are no written records of their activities, their actions are written in their skeletal remains. Our own body and the activities we still undertake is another good clue. Some people have also retained their ancient traditions and means of survival. Ethnographic data gathered amongst the last hunter-gatherers can also be very fruitful. But we must always be careful with ethnographic data. Modern humans are always modern humans, no matter how superficially similar their culture is compared to our prehistoric ancestors.

As far as we know, for the last two million years, we have been hunters. But how did these distant ancestors hunt if they had no projectile weapons like bows and arrows? This mystery was unanswered until recently when the hypothesis of Persistence hunting was proposed (Carrier 1984; Bramble & Lieberman 2004). Another thing which we might consider as a fact is that almost all hunter-gatherer cultures practice some sort of rituals and practices which involved experiences in altered states of consciousness. The connection between altered states and prehistoric art was made famous by South African scholars J. David Lewis-Williams and Thomas Dowson (1988).

The hypothesis has been controversial ever since it was initially published, but it was soon absorbed and it remains accepted today. However, I believe this view is still incomplete. I believe we can elaborate this theory much further now that we have the persistence hunting hypothesis suggesting how prehistoric humans hunted without complex weaponry. In my opinion, hunting is described in ancient and more recent rock art, but these descriptions are much more evasive and metaphorical, and remain more closely entwined with the psychology of the hunt.

The psychology of the ancient hunting practices, like the hallucinations experienced by the hunter-gatherers of the Kalahari while tracking and pursuing their prey, remain more or less unstudied. This connection between the shamanic approach suggested by Lewis-Williams and his colleagues and the persistence hunting and tracking hypotheses suggested by Carrier, Bramble, Lieberman and the master tracker Louis Liebenberg is one of the most important features of this study. The visual cues to hunting are metaphorical and rooted in human psychology and we can only hope to find fragments of them in ancient and more recent rock art. However, I believe that there is a possibility to solve some of these cues, which I call the *fragments of the hunt*.



1. Image-Makers

This chapter begins with a question asking what is it that we understand as a picture and what images are about. We can understand images as depiction of our experience. The ancient Chinese artists claimed that images come from the interaction of our eyes, our hands and our hearts. In this chapter I claim that the ability to make images is tightly connected to our ability to perceive reality as we do through our experience. We have also adapted evolutionary skills such as deadly accurate and forceful throwing, which has built an embodied foundation for our ability to render external, three dimensional events and vistas into proportionally scaled two dimensional drawings.

If I allow myself a little mind game, and ask myself what is it that we understand as a picture, what is the first picture that comes to my mind? It might be a photograph or a photographic painting, or is it a simple line drawing. But what does it represent? Is it a picture of a person, is it a landscape, or is it a still life with some fruit and vegetables? These kinds of pictures have actually been around for only a very short time. Before the Renaissance, pictures were very different, and the further we go back in time, the more mysterious and alien the pictures get. Pictures have always varied, and the way to make art has also varied similarly. The first representational pictures are about 40,000 years old. I can only imagine the reasons behind the production of these first images.

The actual execution of a picture is also tied to technology. A good example is a self-portrait. It requires a flat mirror, which would have been a very expensive piece of equipment before the seventeenth-century. A self portrait of a myopic artist like myself would most certainly portray a person with eye glasses, which is another piece of complex, sophisticated optical equipment which was still very expensive at the time. These are just few simple qualities that a person can read from a picture. These qualities place the picture in context. But this sort of reading is much harder to do if you go back in time much further.

I often refer to a drawing when I speak of pictures. I feel it is the most simple way of making a picture. It is a simple way, because we all can imagine making a picture with a pencil on paper. It is a simple activity for us. We just look around, make some measurements and transfer that view onto a piece of paper. But as it turns out, it is far more complex than that. After all, if it were that simple, people would have made pictures like that for much longer than a few centuries. But they did not. It raises many questions: Is it not that simple? Is the activity of looking at an object and transferring that image onto a piece of paper such a difficult mental and bodily activity that people did not even come to think of it?

◆ ARTISTS PERSPECTIVE

In this book I often write about *images* instead of *pictures*. Some people might argue that an image is more of a mental abstraction than a material picture, but there are *depictions* which are carved, painted and sculpted as an *image* of something. An *image* might depict something experienced in real life or in the imagination of the *image-maker*, or something a person experienced in altered states of consciousness. For me an *image* is not just a mental image, and a *picture* is not just a simple depiction on a piece of paper. A mental *image* does not transfer onto a piece of paper that easily to make a *picture*. That is why the depicted *picture* might just as easily be titled as an *image*. It is the result of a process of *image-making*, and often depicts something completely different, which I had no intention making in the first place.

I have often tried to draw a *mental image*, just to find out that it is quite impossible. The *image* in my '*mind*' is much too elusive for a simple and effective depiction. It is like trying to explain a dream to someone. The whole dream suddenly escapes or changes its form as you try to explain it. If I put my pencil on a piece of paper and leave a mark, the mark begins to suggest possible options of how to continue. This process has an almost endless amount of possibilities and the resulting *image* has rarely anything to do with my original intentions.

I will also occasionally write about *images* as *art* and *image-makers* as *artists*, without the contemporary attachments of aesthetic qualities or art sociological connotations. For me as a practical artist, this is just much more convenient. This is especially the case with the general and widely accepted term '*Rock Art*' which refers to a wide range of ancient and more recent paintings, objects and engravings made by hunter-gatherer societies through the world.

I hope that the majority of my readers would understand that whenever I write about *art* and *artists*, I am not trying to open the Pandora's box of art philosophy and aesthetics, since it is not my field of research. I will try my best not to distract anyone with terms such as *artistic* or *aesthetic quality*, since I acknowledge the fact that we often have no idea what the original intention of the image-makers was, or the role of the images when they were executed.

The philosophical conceptual analysis and aesthetics are deliberately left out of this study. In my view, the matters addressed in this thesis are not necessarily philosophical or aesthetic. My perspective is much more practical. My professional background is in visual arts and even my doctoral studies to the Department of Art of the Aalto University in addition to this thesis included three practical artistic productions which were evaluated individually. As an artist my own personal interests have taken me to study rock art and indigenous cultures in Namibia and elsewhere. This interest has taken me to study fields such as neuropsychology, philosophy, paleoanthropology, ethnography and archaeology. I do not claim to be a professional scholar at any of these fields, but I have tried to utilize the best possible material to support my claims. The results presented in this thesis to support my claims are not results presented by an expert in any of the fields mentioned above. However, I present a perspective of an artist. I have tried to combine material from various fields of

inquiry to present supportive and opposing data. I hope this contributes to the idea of combining a point of view of an artist and scientific discourse.

My general idea is to rely on conversations between practices which might seem unrelated when viewed superficial. American philosopher Richard Rorty (1980) refers to a similar kind of practice as *edification*. I believe that as an artist, I should pursue useful knowledge wherever it is available, whether it might be a university lecture on neuropsychology or a conversation with a Namibian hunter-gatherer.

According to Rorty the difficulty stems from a philosophical pursuit of the discovery of essences and from the fallacy “*that the universe is made up of very simple, clearly and distinctly knowable things, knowledge of whose essences provides the master-vocabulary which permits commensuration of all discourses.*” (Rorty 1980, 357). Instead, Rorty calls for argumentation from diverse perspectives. According to Rorty (1980) we “*remake*” ourselves as we read, talk and write and thus we become different people. Rorty writes that knowledge is a much more active process. It is more than just getting the facts right, which is merely an introduction to “*finding a new and more interesting way of expressing ourselves.*” Rorty continues saying that “*from the educational ... point of view, the way things are said is more important than the possession of truths.*” (Rorty 1980, 359).

When we are pursuing the ideas related to the origins of the first subjects depicted in earliest examples of figurative painting and objects, I believe it is quite impossible to perform from any specialized perspective. A multidisciplinary approach is necessary. Artists are often very practical people. This also applies to me. I have not relied on written records before I have had personal experience on the matters. This especially applies to the persistence hunting hypothesis, which is pivotal to my thesis. In the course of four years I have learned how to run long distances (up to 80-kilometers) in simple sandals and I have interviewed hunters and been out hunting myself with the trackers of the Kalahari.

The majority of the material presented in this book, such as the shamanic approach of prehistoric art or the persistence hunting hypothesis, are not my own ideas. What is important is the fact that they might illuminate important aspects related to our past. They might be more closely connected to each other than previously suggested. This interesting connection has been neglected by the previous books on the subject.

My original intention as a researcher of fine arts was never to intrude the realms of paleoanthropology, neurosciences, aesthetics, philosophy, archaeology, art history or any of the specialized fields of inquiry presented in this thesis. I am a practicing visual artist with a tremendous urge to discover the roots of my own field. I humbly stand on the shoulders of giants of these fields and I have no intention of pointing errors in anyones work, but to make connections and synthesis, which I trust is right.

◆ THE EYE, THE HEART, AND THE HAND

British artist David Hockney has referred to an ancient Chinese proverb that painting draws on three things: *the eye, the heart, and the hand* (Weschler 2008, 190). The two won't do, you need three. In 2004 Hockney began painting freehand again, making simple watercolor sketches. He longed to return to doing freehand paintings after years he devoted to examining the use of optical devices in the early Renaissance (Hockney 2006). This time he was especially fascinated by the work of Rembrandt. What really captivated him about Rembrandt, was the hand. Hockney says:

“The evidence of a human hand moving. ... The precision and yet the liveliness of gesture, of observed and rendered gesture. As in the great Chinese paintings of that same period—one of the high points of Chinese art, after all, was occurring during those very same years.”
(Weschler 2008, 190).

The Chinese saying Hockney refers to is a very poetic metaphor. In Chinese language the mind is denoted by the character *hsin*, which literary means the heart. The heart is regarded as the seat of the spiritual and moral intelligence and perception and its function being to think and also to control emotions. These ideas are closely linked in the ways Taoism and Buddhism influenced Confucianism. The Song Dynasty Confucian scholar Zhu Xi or Chu Hsi (1130–1200) was an influential rationalist Neo-Confucian in China. The same idea of heart as a cognitive organ is also found in his interpretation of *s̄shu* as the concept of seeking within the heart. (Sze 1956, 31).

According to the fifth century artist Tsung Ping (c. 373–443) the perceptual visual information is received through the eyes and this information is interpreted by the mind, or *hsien*, the heart (Sze 1958, 34–35). The six principles described by art historian Xie He (also known as Hsieh Ho) in the sixth century, suggests that an image represent the balance between the painter's inner resources and their pictorial demonstration. The Chinese phrase “*heart and hand must be in accord*” is derived from the same conceptions. (Sze 1956, 48).

According to the eighth century painter Wang Wei, painting had to represent mastery of the eye and hand, but it also had to be intellectual play, serious pleasure, in which emotion was confronted with philosophy. Wang Wei was one of the first Chinese painters who started to paint landscapes. The Chinese imagery was dominated by portraits before him. (Pasanen 2008, 118).

In the Chinese image making tradition the Heart is considered as a symbol for the yin, the inner power and guiding instinct, an organ of perception and emotion, and the Hand represents the human action in the world and stands as a symbol for technical expression. The heart is the perceptual and emotional organ, but also the receiving organ of the Tao, the path. (Sze 1956, 92).

The idea of co-ordination of heart and hand is essential for Chinese ink painting. The seventeenth century painting manual Jieziyuan Huazhuan, the Manual of the Mustard Seed Garden, teaches that each stroke should be a living idea (*shêng i*). The brushwork is seen as a direct expression of the human mind in activity (Sze 1956, 102).

The influential manual of classical Chinese painting from the late seventeenth and early eighteenth century called “Chieh Tzu Yuan Hua Chauan, or Mustard Seed Garden Manual of Painting” (Sze 1956) insists that the painter must learn how to still his heart (*hsin*, the organ responsible for perception and emotions). The painter was required to practice meditation to become a painter, but also the whole activity of painting was seen as a kind of meditation (Sze 1956, 103).

Meditation has an even more substantial function in Japanese Zen painting, the *zenga*. Landscapes executed with minimal brushstrokes are very typical for *zenga*. Although the paintings often depict seemingly real life subjects, they are mostly done based on prior experience. The purpose of the *zenga* practice is meditation itself and the individual path to enlightenment. (Pasanen 2008, 167–168).

The depiction of movement, which is essential for Chinese painting, illustrates the transformative process of nature. The painter has moved through the scenery and tries to depict the path that he or she experienced for the spectator. The spectator is invited to move through the painting by providing several points for inspection. The scenery is never seen from a single position or at one moment in time; the spectator’s mind is invited to travel through the vast expanses of sky and mist. (Sze 1956, 93–94). Some classical Chinese paintings with multiple viewpoints use a very peculiar perspective known as Axonometry. The image-makers ignored the optical law of diminution and the effects of lights and shadow. The two dimensional objects are often placed in three dimensional axonometric space without foreshortening (Krikke 1996).

DRAWING ITSELF MIGHT be seen as an action of the human body, a sort of co-action of the eye, hand and mind. It is deeply rooted in human anatomy. Anatomical abilities do not make image-making necessary, but they can enable it. Drawing employs the same physiological features that are used for throwing rocks, knives or javelins. Drawing is one of the simplest ways of understanding the functions and relations between our perception systems and our own actions. However, unlike with throwing rocks, drawing makes an imprint of our presence in time and space.

Our hand is very distinctively different from the hand of a chimpanzee, our closest remaining relative in the animal kingdom. The chimpanzee has noticeable difficulties using its hand to hold a pencil, or a brush, or anything else to perform any tasks demanding subtle accuracy. Undoubtedly our hand has not evolved to perform these tasks either. However, these skills are a byproducts of much more ancient skills that our hand most certainly has evolved to perform.

Our hands were shaped through millennia to become the way they are today. The human hand can be viewed as an operational device between us and our environment. Our hand was formed due to our persistence in making the best kinds of stone tools possible. We have been making these tools for at least 2.6 million years (Semaw 2000). Making and using these tools has also shaped us. Our thumbs are relatively longer and stronger than the ones chimpanzees have, and we also have shorter and more robust finger bones and larger joints on our fingers.

◆ THROWING

Kenyan paleoanthropologist and archaeologist Louis S. B. Leakey found an extraordinary set of human-like hand bones at Olduvai Gorge in Tanzania in 1960, at the same level as primitive Oldowan stone tools, dating to about 1,75 million years ago. Especially the thumb of this early *Homo* was strikingly human-like. This species of early *Homo* was named *Homo habilis* (handy man), because it appeared that this person was capable of making the Oldowan stone tools found on site. Since this find, the human hand has been studied in relation to its tool making (Marzke & Marzke 2000, 121).

The combination of precision and strength is highly important when you are flaking and using a stone tool (Marzke & Marzke 2000). These qualities are highly valued by anyone who needs to skin and deflesh an animal carcass with a stone tool covered in slippery mixture of blood and fat (Rolian, Lieberman & Zermeno 2011). The use of our tools has also shaped the way we interact with our environment and the resources in it. The ability to throw objects with force and accuracy is only evident in our own species. Only humans can make and throw a stone tipped javelin with lethal consequences. Humans are also the only ones that can gently but firmly hold on to a pen and make detailed drawings.

According to Harvard University paleoanthropologist Daniel E. Lieberman (2013), chimpanzees and other primates occasionally toss branches, rocks and nasty stuff like feces with reasonable aim, but they cannot do it with a combination of speed and accuracy. Humans throw in a totally different manner. We take a sideways posture, have our elbow flexed, and the arm bends behind our body. We then release massive amounts of energy by rotating the waist and the torso, unleashing forward motions in the shoulder, elbow and finally in our wrist. With this evolutionarily generated ability we can throw projectiles like spears and rocks at up to 100 miles an hour with lethal accuracy. (Roach, Venkadesan, Rainbow & Lieberman 2013; Lieberman 2013, 89).

The theoretical neurophysiologist William Calvin (1982) claims that throwing with force and accuracy provided a context for favorable natural selection to Broca's area in our brain. This region is attributed to skilled mimicry that would have been important for process imitation of stone knapping and subtle gesturing, and also for controlling facial expressions and vocal muscles. Calvin (1982) suggests that these transformations might have been pivotal for the evolution of speech.

Author and a journalist Christopher McDougall (2015) has written about human physical potential and skills which are not forced upon us by intense practice, but skills that have deep evolutionary roots that could be easily released. Most of these practices are methods of natural movement, such as running, climbing, crawling, but one of them is shooting with instinctual aim. It has very deep roots in our evolutionary adaptations for throwing. All we have to do is to point our finger and we can lock our entire body into a target. It only takes a brief glance and instinctively we can point the target with our fingertip. McDougall claims that no-spin knife throwing is a good example of instinct shooting. McDougall also tells a compelling story about the Wild West trick-shot artists who were blazing away from their hips with



Fig. 1. Practicing no-spin knife throwing. Helsinki, Finland.
Photo Maija Ijäs. August 2015.

incredible accuracy, like Annie Oakley who could split a playing card from 40 feet away and shoot ambidextrously vaporizing clay pigeons.

I became interested in instinctual aim about a year ago and I've been practicing on bow and arrow, self-made atlatl (spear-thrower), darts, rocks and no-spin knife throwing. I must say it is a most satisfying experience when you engage your whole body and zero in on a target and launch an object and deliver it to its target. No other animal can do this. With a very little practice we can become extremely good at it.

Throwing has undoubtedly been an instrumental skill which has helped our species to survive under the selective pressures during the millions of years of our evolution. The evolutionary advantage is evident as we still enjoy playing games involving this very same skill. We love to throw baseballs and javelins. But this skill has also evolved in us an ability to use our vision to accurately measure distances and the relation of different objects to our own body. This skill is very important for drawing. We use our own body to perceive and depict our surroundings and objects in it.

◆ DRAWING AS AN IMAGE OF AN EXPERIENCE

Drawing is a way to depict and decipher the world as we humans experience it or have experienced it in the past. Drawing also depicts the presence of the *artist* or the image-maker. Drawings, pictures and other areas of human activities are changing because the possibility of digital manipulation. Within the past few years digital devices have become more user friendly. My experience as an artist has led me to believe that image-making might be seen as an action of the human body, a sort of complex co-action of the eye, hand and the whole body. This view of image-making as a functional and perceptual activity could allow us to see and completely understand new aspects of pictures, and it could also reveal interesting features about other areas of human activity. Visual *artists* could be seen as professionals of visual perception and visual problem solving. For thousands of years image-makers have been in the *avant garde* of depicting our world together with physicists, mathematicians and other natural scientists. The problems that *artists* have pondered have retroactively often become the problems of other scientists. Pictures might be regarded as a human interactions between the individual and the environment. The picture is a product of human activity and by making the picture one makes individual ideas visible and presents them for public examination. Image-making could be seen as a rendering of the experienced world or a revisualization of an idea.

According to American philosopher John Dewey (1958) there is a distinction between the art product (statue, painting, etc) and the work of art. The product itself has the potential to become a work of art that is active and experienced. According to Dewey:

“When the structure of the object is such that its force interacts happily (but not easily) with the energies that issue from the experience itself; when their mutual affinities and antagonisms work together to bring about a substance that develops cumulative and surely (but not steadily) toward a fulfilling of impulses and tensions, then indeed there is a work of art.” (Dewey 1958, 162).

We might think that a painting, drawing or a sculpture is an expressed experience of human activity and it has all the potential to be a work of art. A painting, for example, is an artist’s rendering of an experience, which the artist expresses to the spectator, who in turn receives a new experience acquired through this object. The spectator is presented with new perspectives, because of the experience provided by this piece. According to Dewey, art has a significant role in the dissemination of experiences and knowledge in human society. The artists produce pieces, which are representations of the curious and interactive nature of humans. From Dewey’s perspective, art objects and actions could be seen as products or expressions of human experience, which are derived from knowledge based on the experiences of an individual, but also from knowledge based on the experience of a larger social scale.

Drawing is a way to depict the world as we experience it. Looking at our three dimensional world and carefully transferring this view into a two dimensional rendering on a piece of paper is a very unique and complex ability. A drawing can depict the world as we perceive it, but it can also depict things that we have seen before,

and the things we have experienced in our dreams. But the elusive mental image, or whatever we might want to call it, does not automatically transfer into a piece of paper, the process of drawing itself often transforms the original idea into something a bit different.

When we are looking at the world, we see the things our bodies are wired to perceive. This process is built on our previous experience of the world. We see things the same way as other people (with exceptions of varying cases of visual agnosia). The final emotional outcome of our perceptions is mostly shared among our species, but still individual to some extent, because it is influenced by our memories and experiences, but on a basic level all humans see things in the same way.

THE HUMAN ABILITY to make and understand works of art must have its origins in the everyday challenges of our early ancestors. In my view it must have been something which was closely related to the challenges posed by the selective pressures. What I am suggesting is that humans started to make images, because it was closely linked to their everyday challenges for their very existence. Something that was beneficial in the selective pressures, such as good methods of hunting changed the minds of the hunters in such a way that they found it important. Today, it might seem as if image-making is only a social activity that has no basis for everyday challenges such as acquiring food. The chapters that follow will take a closer look at the main questions, which I have been trying to answer during the process of writing this. After the following chapter I will look into the lives of the last hunter-gatherers, which are essential to the later chapters of this thesis. After this I will go deeper into human evolution and to the final question of how images could have originated from our struggle for our own existence.



2. Hypothesis

Why do humans even bother to make and view art and how it might have originated? I believe the origins of making images could be found somewhere which is closely related to the practical lives of the early hunter-gatherer societies. Most of the more recent hunter-gatherer societies had shamanic rituals and practices suggesting that these activities were already in place when modern humans left Africa approximately 60,000 years ago (Hali-fax 1982). Practices of image-making disseminated simultaneously. I suppose shamanic practices and art must have origins in the hunting methods of the early humans.

I suggest that the activity that led to these practices would have to fulfill at least the eight following qualities:

1. Some evolutionary adaptations must have already taken place much earlier to ensure further adaptations towards the next steps for this activity.
2. The activity must be pivotal to everyday activities of ancient humans. It not only ensures existence, but it also enabled them to flourish and permitted further adaptations for bigger brains for more complex cognitive skills.
3. This activity must have also been difficult enough that it could have pushed towards the adaptations enabling more enhanced cognitive skills, which were necessary for better success in this activity.
4. The activity must have been practiced already a very long time ago, so it is sufficient to say that they enabled new adaptations and new activities.
5. This activity itself must have produced experiences that could be considered as clear evidence for altered states of consciousness.
6. The activity must still be a part of some shamanic rituals, especially in Africa.
7. The activity, or at least some allegorical '*Fragments*' of this activity, must be visible in the earliest forms of imagery depicted by modern humans.
8. The activity must still be practiced today and give pleasure and meaning to people's lives.

The only possible explanation I have been able to find is hunting. I am suggesting that we approach the issue by accepting an idea of the metaphorical '*Fragments of the Hunt*,' referring to the idea that hunting is not just a way to acquire and share food. This idea would be also tied together with the group-cohesion, and the altered states of consciousness. The most archaic hunting methods are dealt with throughout this book, but weaponless methods of running down antelopes (also known as persistence hunting) are extremely important for this thesis. The persistence hunting hypothesis is discussed in detail starting from Chapter 8.

◆ SHAMANIC APPROACH

The connection between altered states and prehistoric art was made famous by South African scholars David Lewis-Williams and Thomas Dowson (1988). Throughout his works, Lewis-Williams has stressed the significance and widespread nature of the shamanic ceremonies including altered states of consciousness. He has also given examples of imagery and themes depicted in ancient and more recent rock art which correlates to the statements reported in shamanic trance states and more recent studies on altered states of consciousness. Lewis-Williams does not imply that shamanic practices gave rise to the technical rendering of images, nor does he imply that images were made in trance state. The shamanic approach offered by Lewis-Williams does not explain why people began making images. It offers an interpretative model of the activity and the experience behind some of the depicted images. This is a very different approach compared to the ideas of scholars like Whitney Davis (1986) and I will get back to his views very soon.

However, David Lewis-Williams has mostly neglected the aspect of hunting as a likely tool to understand ancient and more recent rock art. One of the reasons for this avoidance has probably been the historical and scholarly baggage which the old hunting magic theory carried. In one of his seminal works (2002a, 194) he notes that several animals in the Lascaux cave are depicted with hoof prints instead of actual hooves. When I noticed this, I had a hunch that there was something important hidden in this detail. Lewis-Williams explains that this feature makes the animal appear to be floating in air. This is also true, but it does not explain why the image-maker depicted a hoof print, instead of a floating hoof. Only a tracking hunter would have thought of this, and the individual who made this picture was most likely an experienced tracker, and a hunter.

Direct hunting scenes with someone pointing a spear or a bow at an animal are extremely rare (although they do exist) in ancient rock art, but that does not mean we could not find evidence of '*fragments of the hunt*' just like Lewis-Williams himself has tried to find "*fragments of the dance*" (Lewis-Williams & Pearce 2004, 100; Lewis-Williams & Hollmann 2006, 509; Lewis-Williams 2010b, 6). This hoof print from Lascaux is probably such a fragment, or a sign telling about the trackers experience.

One of my questions is whether we could find more of these traces, or fragments, of hunting methods from prehistoric art. Could we find fragments which would penetrate the time and location? Could we find some kind of elements or subjects that was repeated throughout the vast selection of rock art found almost everywhere where people settled down?

◆ QUESTIONS OF WHY OR HOW HUMANS BEGAN TO MAKE IMAGES?

American art historian Whitney Davis (1986) has written about the origins of image-making using a perspective that examines the question of what the cognitive or social selective pressure was that enabled or even pushed humans to make two-dimensional representations of our three dimensional world. Davis is therefore pursuing to answer HOW humans became image-makers. This approach also includes

the aesthetic perspective and the contemplation of the evolution of various styles within the Palaeolithic image-making tradition. This is a very different approach from that supported by David Lewis-Williams, for example.

Lewis-Williams has tried to find answers to the questions posed by the subjects and symbols depicted in Paleolithic imagery. He has been trying to answer WHY humans became image-makers and what are the images depicting? This is a very different approach. What is essential, is that Lewis-Williams has been trying to establish a connection between the known hunter-gatherer traditions and images depicted in ancient and more recent rock art. This might ultimately lead to an assumption of what the cognitive and social pressure was which might have led to the birth of visual culture. Davis (1986) on the other hand, is trying to find an answer for questions such as HOW random scratchings could have evolved into representational pictures.

What I find difficult with Davis's approach is the archaeological evidence. We do not have a continuous sequence of evidence of how picture-making evolved. In most cases the oldest evidence is also the most elaborate, skillful and spectacular like the Chauvet Cave (more about the Chauvet Cave in Chapters 12 and 15). There is very little evidence of the visual, evolutionary process which led to the paintings in the Chauvet Cave discovered in 1994. This piece of important evidence was not yet available when Davis devised his hypothesis. The people who painted these pictures were well educated and handled their medium and subject matter extremely well. The people who made these paintings were obviously professional image-makers who had practiced painting somewhere under professional guidance. In my view, Whitney Davis's ideas are very interesting and his approach should be thoroughly examined. However, in this study I have found it more fruitful to try elaborate the WHY question and examine the hunter-gatherer practices and how these practices might be visible in ancient and more recent rock art and try to answer the question what was the reason why humans became image-makers.

◆ ICE AGE MINDS?

The hypothesis presented by Lewis-Williams and Dowson (1988) was based on the idea that all anatomically modern humans shared the same nervous system. They claimed that it was likely that at least some of the features in Upper Paleolithic art could be explained neurologically. They claimed that the altered states experiences might have had a very little variance, since the contemporary reports of altered states experiences correlated with the Paleolithic imagery amazingly well.

But was the Ice Age mind and consciousness as similar as they are suggesting? Merlin Donald's concept (2001) of the 'hybrid nature of our consciousness' implies that we might suppose that the actual framework of the nervous system could be similar, but its functions are always cultured by environment and social interaction, including symbolic systems, which are totally different in our modern world. Therefore we might suppose that it might be impossible to establish a bridge between our contemporary minds with the Ice Age minds.

However, the entoptic imagery referred to by Lewis-Williams and Dowson (1988) is very similar in all people. This experience is independent from culturally transmitted experience. The only difference is the ways the people interpret these entoptic abstract hallucinations. We might suppose that Donald's enculturation process does not effect entoptic hallucinations, and therefore some kind of neurological bridge could be possible to establish. We might also suppose that the deep hallucinations of a trancing hunter will revolve around the biggest and fattest animals he is desperately trying to pursue on daily basis. The hunter's hallucinations, in this respect, might have been similar as long as humans were hunters. Therefore, we should not expect to understand the minds of the Paleolithic hunters completely, but I believed there was a connection between contemporary hunter-gatherers and their Paleolithic counterparts, just like Lewis-Williams suggests. My question arose from this dilemma. Was this psychological connection based in the shamanic ceremonies, or was it more tightly connected to a more ancient part of their subsistence, like hunting? And the question evolved: was there something in the hunting itself, which might have caused similar hallucinations as their practice in the shamanic ceremonies?

According to American natural historian, sculptor, paleobiologist, and hunter R. Dale Guthrie (2005) Paleolithic imagery is much more closely tied to practicalities of hunting. He remains one of the few scholars who has studied prehistoric art from the perspectives of an artist and a hunter. He claims that the Lascaux depictions of hoofprints instead of hoofs was important for the tracking hunters who painted them. One of his examples is the blood spoor. The blood trailing depicted in Upper Paleolithic art is a very good example of tracking depicted by the ancient hunter-gatherers (selection of these images are presented in Guthrie 2005, 272–273) (Figs. 54 & 55).

I am in debt to Guthrie's ideas, which gave me a hint of what kind of images and symbols might actually be related to the 'fragments of the hunt'. Certainly the most obvious depictions of tracking, like animal tracks, hoof prints and blood spoor, can be attributed to hunting practices just like Guthrie suggests, but what about the more subtle signs and more elaborate hallucinatory images, could they also be related to hunting in a bit more metaphorical way? My question was: could some of the more supernatural elements in rock art be interpreted through hunting practices?

◆ THE ORIGINS OF HALLUCINATORY EXPERIENCE

Lewis-Williams does not claim (nor do I) that trance ceremonies themselves produced the first images. The shamanic approach to interpreting rock art cannot answer the question of how people became image-makers. However, the impact of the shamanic experiences which the people went through might have been so powerful that it gave birth to the original necessity for telling about these experiences visually. What Lewis-Williams does claim is that the imagery depicted in ancient and more recent rock art might be related to altered states experiences, which might have originated from shamanic ceremonies and other practices. Lewis-Williams

(2002a) has suggested that modern humans began to make art when they reached the Western European *cul-de-sac*. The evidence found from Namibia (Wendt 1976) and Sulawesi Island (Aubert et al. 2014) does appear to contradict this claim suggesting that modern humans probably already had the image-making traditions as they left Africa about 60,000 years ago. My question arose from this contradiction. Lewis-Williams claims that humans already had shamanic practices before they began to make images, but when, where and how did humans begin to practice shamanism? I wanted to extend this question to find out what the origin for the shamanic ceremonies was, and whether hunting might have been related to that.

I WAS INTRIGUED by Lewis-Williams's writings about the hunter-gatherer cultures of the Kalahari. My own interests was in the hunting practices and in their other everyday activities. A question arose from this interest. Was there an activity the hunter-gatherers often engaged with that could have predated their ceremonial practices for trancing? Did they habitually practice something which, under the right circumstances, could have derailed their minds into altered states of consciousness?

The studies by South African anthropologist Louis Liebenberg (2006; 2013) seemed like a logical source of information. Liebenberg's (2013, 19) own account on his experience of transforming into a bull kudu while he was running it down with a group of Kalahari hunters appeared to answer some of the questions, but it also gave rise to new ones. One of the main questions was: could all of those half-human half-animal figures, that penetrate all ages and distances in rock art, be linked to the persistence hunting experiences?

My idea was that these fragments of the hunt might also be a bit more subtle. Instead of depicting hunter tracking and running after an animal, the fragments might be small hints just like the hoof prints on the animals in Lascaux. Direct hunting scenes are even rare in Namibian rock art, where there are a lot of engraved and painted tracks. However, if the ancient hunters who painted these images also hunted animals without weapons, by running them down for instance, it would be obvious that in some cases no weapons might have been depicted. What is important in the example presented by Louis Liebenberg is that running down an antelope does not require any complex tools. It is a physical skill that leaves no other archaeological evidence besides skeletons.

◆ WEAPONLESS HUNTING

American paleoanthropologist Daniel E. Lieberman and his colleagues have proposed a very intriguing hypothesis based on the skeletal remains of our ancestors. They suggested that our ancestors evolved to run down big game. According to this hypothesis our ancestors living two million years ago were already adapted to run long distances for scavenging or possibly even for killing big game by running them into exhaustion (e.g. Carrier 1984; Liebenberg 1990; Bramble & Lieberman 2004).

This hypothesis is known as the persistence hunting hypothesis. This gives us a very attractive timespan. Endurance running itself is known to make alterations in

our consciousness (Dietrich 2003; Raichlen, et al. 2012). Endurance running, combined with the intense imaginative process required by complex tracking, together with hyperthermia and dehydration is enough to derail human consciousness causing alterations in our perception (e.g. Liebenberg 2013).

This raised a question: Why wasn't persistence hunting ever mentioned in rock art studies? Apparently the whole discussion around this topic has only been processing since 2004 (Bramble & Lieberman) and no attention has not yet been paid to this material.

According to German archaeologist Tilman Lenssen-Erz (2007) only 0.6 percent of the images depicted in Dâureb/Brandberg (a mountain in Namibia) can be interpreted as having human animal relationships and even these cannot be interpreted as being hunting scenes, due to their lack of weapons. However, persistence hunting does not require any weapons. South African archaeologist Pieter Jolly (2002) describes a weaponless hunter reaching out to their prey: "Some [hunters] are shown relating to elands in unusual ways, reaching out to or touching these animals." (Jolly (2002, 88–89). My question was: could these weaponless running hunters, often half-animals, be attributed to describe a metaphorical persistence hunt? During the hunt, the hunter might experience transforming into an animal, which could explain the therianthropes reaching out or touching the animals. The therianthropes are examined in Chapter 15. This similar activity of grabbing the eland's tail at the end of the persistence hunt was described by Elizabeth Marshall Thomas (2006, 32) (Figs. 17 & 67).

WITH THESE QUESTIONS in mind I set out to examine the literature and tracings on rock art, but I also immersed myself into research material on psychology and paleoanthropology. I also traveled to meet one of the last hunter-gatherer groups still living in the Kalahari in Namibia to ask them if they still ran down antelopes. The answer to my question turned out to be a simple "no". The skill for persistence hunting was gone partly due to scarcity of animals suitable for this method. The skill was lost at least among the Ju/'hoansi of the Nyae Nyae Conservancy, where I was doing my research and filming. During my trip my questions evolved into the following: what did the tracking hunters experience when they were reading and following the animal tracks, and if the trackers were also engaged with the trance ceremonies, I was interested in knowing whether tracking was related to these ceremonies? This is dealt in Chapter 9.

The main hypothesis presented in this book is based on the persistence hunting hypothesis. Our distant ancestors tracked and ran down big game. During this process they possibly became immersed in the minds of the animals and experienced something which was extremely difficult to describe in words. This experience was extremely powerful and it felt significant. These hunters could have felt that this cognitive shift, into the mind of the animal and hallucinations of transforming into the hunted animal, might have played a part in the hunting success. Alternatively, this experience might have also established a connection to the supernatural realms in their beliefs.

The inexplicable hallucinatory hunting experience of transformation into an animal might have served as an origin for purposefully set up ceremonies, the kinds still practiced among the hunter-gatherers of the Kalahari. This connection between hunting experiences and trance ceremonies could explain why all rock art cannot be reduced to the shamanic approach. Some elements in rock art still depict hunting in more practical levels just as Guthrie has suggested, but as I am suggesting in this thesis, some images could also carry an allegorical level and this level is not necessarily a shamanic level. Rather, this level might be a depiction of fragments of the hunt.



3. Hunter-Gatherers

This chapter is dedicated to a brief account on the history of the Southern African hunter-gatherers, commonly referred as the San or the Bushmen. The San have lived in Southern Africa continuously as long as humans have been humans (possibly even 150,000 years). For the past two millennia they have been affected by intruding tribes from the North including the pastoralist Khoikhoi and farming and cattle herding Bantu tribes with their modern iron-age technology. We know very little of the co-existence of these three groups, but arguably it was not always peaceful. The more dramatic change came from the sea, when the European settlers began their expansion from the Southern Cape. Before long, the last remaining San were the ones living in the most arid and inhospitable areas of their ancestral lands, the Kalahari desert. The last indigenous hunter-gatherers who made rock paintings lived in the fruitful hills of the Drakensberg Mountain range, but they were all exterminated or assimilated to their neighboring cultures, before any real first hand information of their traditions were gathered.

I acknowledge the fact that it is deceptive to speak of ancient rock art without invoking the philosophical questions of the definition of the 'art', especially when we are speaking of paintings and engravings executed by indigenous people, who do not exist anymore. We have no clear view of the reasons and intentions of the societies which produced these images. The only features we have left to interpret are the technical aspects and our speculations of the subject matter. We can evaluate to some degree features such as their ability to render moving real-life (or imaginary) objects and entities in static poses on two-dimensional surfaces. We can also evaluate their delicate ability to handle their chosen medium, and appreciate their use of space and how they composed the images on these rock walls. All of these qualities give us the impression which could be (in a need of a better terminology) considered art, but without the modern Western connotations of the concept.

I hope my readers will forgive me when I spare them from a more lengthy definition of this philosophical concept. I would like to remind you that we cannot value the paintings from the Western aesthetic and philosophical viewpoint alone. We must try to understand the imagery in their own context. The ancient and more recent rock art is always a product of their own social and cultural traditions.

Life for the early hunter-gatherers was not nearly as dreadful nor idyllic as some extreme views depict it. They would have been hungry very often and the only way they could obtain food for their survival was through hard physical effort of walking, running, carrying, digging, climbing and more, but also through a complex network of cooperation. However, hunter-gatherers would not have to work more than necessary. After they had satisfied their needs they could enjoy rest and social activi-



Fig. 2. Ju/'hoan hunters G/aqo and Bo eating the fallen fruit of a baobab tree Nyae Nyae Conservancy, Namibia. December 2014.

ties. Modern urban humans suffer abstracted stress unknown to early hunter-gatherers. We spend our lives in fear of losing our job, losing our money and paying our mortgage. Nomadic hunter-gatherers have nothing even remotely similar to these issues. (Lieberman 2013, 129–130).

Children in most modern hunter-gatherer societies work only one to two hours a day, mostly by foraging, hunting, fishing, collecting firewood and helping with other domestic tasks. However, children in farming societies work from two to nine hours a day at much more demanding and physically challenging tasks. (Lieberman 2013, 197).

According to South African anthropologist George B. Silberbauer (1981), the central Kalahari G/wi hunter-gatherers of the mid-twentieth century only had children every four years. The mother only had another baby after she had weaned her first child and this happened when the child was about 3 or 4 years old. According to Silberbauer's informants, this posed a very grueling test for husbands, as abstinence was the only means of contraception and this responsibility fell to the men. The G/wi people rarely had four children, most of them had three or less. This was not

caused by high child mortality rate, which was only about 7 per cent. Rather, the reasons behind this were a late puberty age and long span between the births and an early menopause at about age 30 to 35. (Silberbauer 1981, 156; 160; 287).

For the hunter-gatherers, children are a burden for the first four years, until they can move along with the nomadic band on their own. But for stationary agricultural society living in one place, having lots of small children does not present this problem. On the contrary, kids provided much needed workforce around the farm.

◆ CONTEMPORARY HUNTER-GATHERERS

There are still some hunter-gather societies living in our modern world. The San people of the Kalahari are probably the most thoroughly researched society of the more recent hunter-gatherers, but their culture has gone through drastic changes during the past centuries and especially during the past decades.

There are only very few real hunter-gatherer societies remaining in the world. They are all dependent on natural environment and their resources. Very few areas remain on our planet that could provide enough resources for large groups of hunter-gatherers, and the last societies still remaining live in the extremely remote and inaccessible areas, which are difficult to exploit by modern industrial society. However, hunter-gatherer societies face serious issues in our modern world. Their ancestral lands are being invaded and their people are frequently killed or brutally evicted. Many of these societies are prone to simple infections and often die in large numbers after their initial contact with outsiders.

The Hadza people living in northern Tanzania might be among the last ones to qualify as hunter-gatherers in Africa, since the Kalahari San are more or less assimilated to more modern ways of subsistence. The Hadza are frequently visited by researchers and documentarists but also increasingly by tourists. Another African hunter-gatherer group known as the Ogiek people lives in Kenya, but they have been subjected to constant forceful evictions from their lands in Mau Forest. Another hunter-gatherer group is known as the Chabu people. They live in the remote parts of the Ethiopian forest highlands, northwest from the Lower Omo Valley. It has recently been reported that the Chabu are reportedly being hunted down and killed by settlers invading their lands.

There are still some groups that were left unaffected by the old spice routes. One such group is living on a small island located east from India. According to human rights organization Survival International, the Sentinelese people live on the autonomous North Sentinelese island on Andaman archipelago in the Bay of Bengal between India and Myanmar. They are possibly the last real Paleolithic people on our planet. This is pretty much all we know about them. The Sentinelese (population 50–400) continue to actively and violently reject contact with outsiders. They have remained totally untouched possibly as long as people have lived on this area. I am extremely curious to know if their culture has a tradition of making images. This is something we might never find out. Besides these mentioned examples I will not go into further details of the other hunter-gatherer groups that still exist.

◆ THE PROS AND CONS OF HUNTER-GATHERER SUBSISTENCE

The last remaining people living hunting and gathering live in the most inhabitable areas possible. These areas are the last corners of our planet where agriculture is impossible or these lands do not have enough resources for Western civilization to exploit. Sometimes these areas are also so densely guarded by the natural elements that outsiders have been kept away by the forbidding environment, as in the Amazon rainforests.

Canadian anthropologist Richard Lee (1968) describes how the Ju/'hoansi hunter-gatherers devoted only twelve to nineteen hours a week to getting food in the Dobe area in the semi-arid Kalahari desert in Botswana. There was a certain differences between individual efforts, but even the most hard working member spent a maximum of 32 hours a week (Lee 1968, 37).

The diet of the Kalahari San consists of edible plants, insects and game, with occasional wild honey. An average daily caloric intake for a Ju/'hoan hunter-gatherer of the mid twentieth century was more than necessary for a small size physically active person (Lee 1968, 39). These calories were formed by meat, Mongongo nuts, and other vegetable foods. Modern hunter-gatherers are generally healthy and rarely sick and they do not suffer from occasional famine like farmers do. The Ju/'hoansi had 84 edible food plants available which varied according to season (Lee 1968, 33). Even in the extremely harsh Central Kalahari, the G/wi people utilized 79 edible food plants, of which 35 species were gathered regularly, and they formed 75 to 100 per cent of their foods in volume (Silberbauer 1981, 198). It is rather difficult for the hunter-gatherers to die of starvation when they have the necessary knowledge and enough space.

◆ THE SOUTHERN AFRICAN SAN PEOPLE

None of the five distinctive language groups of Kalahari hunter-gatherers had a collective name for themselves in the early 1950s. The most extensively researched group of hunter-gatherers living mostly in the northwestern Kalahari in Namibia and Botswana called themselves the Ju/'hoansi, which can be loosely translated as 'harmless persons'. The word "Ju" means a person and "/wa", which is also spelled as /'hoan, can be translated as "just" as in "simply", but also "worthwhile", "clean" "correct" and "harmless". Ju/'hoansi is therefore a plural expression of a single Ju/'hoan. The !Kung dialect spoken by the Ju/'hoansi had no collective name for other similar people. The other people were occasionally referred as *Ju dole*, which stands for the bad people. (Marshall Thomas 2006, 43-45).

The ancestors of the more recent hunter-gatherers have lived in the Kalahari probably as long as humans have existed and their subsistence remained unaffected by other people until the Khoikhoi herders arrived about 2000 years ago. The Bantu farmers arrived a few hundred years later and eventually over a millennia later the English, German and Dutch colonials penetrated into the Kalahari from the south. For these newcomers all the various click languages sounded alike and they simply referred to all Kalahari hunter-gatherers as the Bushman, Boesman, Basarawa or Bakalahari.

The Ju/'hoansi did not differentiate between the various intruders and referred to them as red people, whites, and black people. But they also had a collective name for the intruders, which was *!Xohmi* meaning the non-ungulates. The same name is used for lions and hyenas. The Ju/'hoansi made a clear distinction between the beings meaningful for their existence and the hoofed animals they hunted. The intruders were simply included in their taxonomy with the animals the Ju/'hoansi disliked (Marshall Thomas 2006, 45–46).

The other native Namibian pastoralist group known as the Khoikhoi are former hunter-gatherers speaking the related Nama-language. The Khoikhoi had already acquired livestock before the new settlers from the south arrived. They soon adapted to their new lifestyle and began farming. The Khoikhoi used an insulting name “San” for the hunter-gatherers living in Southern Africa. The Nama word “San” translates as the people who live in the bush and eat food off the ground. It could also be derived from the Nama word “*sonqua*” which means a bandit. The famous anthropologist Isaac Schapera who studied the indigenous peoples of the southern Africa used Khoikhoi informants while studying the local natives. Schapera (1930) first introduced the term San to academic circles and also bundled the Khoikhoi languages and San languages under a more collective and artificial term, Khoisan. (Marshall Thomas 2006, 46–47).

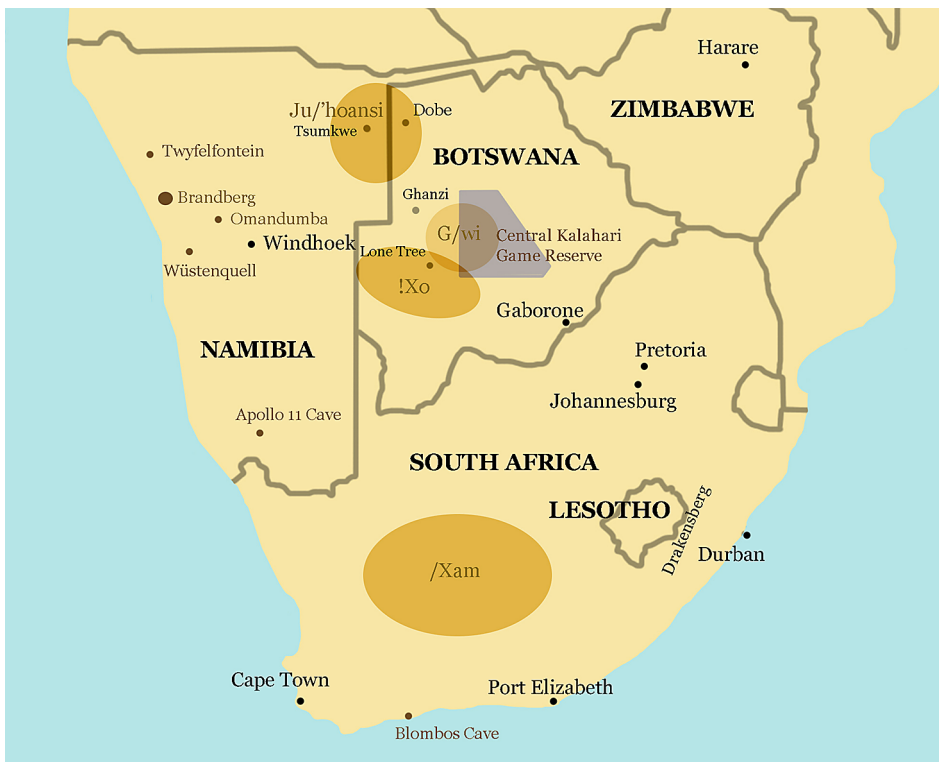


Fig. 3. Map of the Southern Africa with the major San language areas and other important sites often mentioned in this book.

◆ THE KHOISAN LANGUAGES

The click languages used by the Khoisan are considered some of the oldest languages in the world. They are currently used not only by the people belonging to Khoisan language groups in southern Africa, but also by the Hadza hunter-gatherers in northern Tanzania over 2000 kilometers north-west from the Kalahari. Although genetic studies on the Khoisan and the Hadza have revealed a separation of these groups some 100,000 to 50,000 years ago, it is still plausible that their languages are related (Pennisi 2004). It might suggest the ancient nature of the click languages. There was only one non-African click language spoken by an extinct Australian Aborigine tribe, the Damin. They used a click language during their manhood initiation ceremonies. The San can reduce other sounds from their language during stalking and use only the click sounds to communicate (Pennisi 2004).

The clicks commonly used in San languages include:

/ **Dental click** made by sucking on the front teeth, and the tongue is pulled away in the release.

! **Alveolar-palatal click**. The tip of the tongue is pressed firmly against the alveolar ridge and sharply snapped down resulting a loud pop. English speakers use the same sound imitating horses hoofs.

=/ **Alveolar click** The front part of the tongue, more than the tip, is pressed against the alveolar ridge and snapped down.

// **Lateral click** is less sharp than !, made by sucking on the molars on sides of the mouth.

X **Guttural sound** as in German ch in Bach or as in Scottish ch in Loch.

(Marshall 1999, xxiii-xxvi)

The name 'San' for these people felt more gender-appropriate than the Bushman, and in politically-correct academic circles it was widely accepted and it has been widely used in anthropological studies to refer the Southern African hunter-gatherers. However, in Botswana and in Namibia where the Khoikhoi and San live, the term San have been considered as being disparaging towards the people and it was never widely accepted (Marshall Thomas 2006, 47).

The contemporary San of the Kalahari refer to themselves in many areas as the Bushmen. However, the Ju/'hoansi living in a village called //Xa/oba where I spent one week with the village hunters preferred the term San. The annual general meeting of the Working Group of Indigenous Minorities in Southern Africa (WIMSA) has also decide to use the term San. This decision was agreed to by the international participants of several San tribal representatives. Therefore I am confident using the collective academic term San instead of Bushman, although some of my research material refers to Bushman.

In some historical cases I will only refer to hunter-gatherers, but always when possible, I will try use the specific name of the people. In most cases it will be Ju/'hoansi (used in recent times in Namibia and Botswana), G/wi and !Xo (used in recent times in Botswana) and /Xam and !Ga !ne (used to refer to extinct or assimilated groups).

lated groups from South Africa). The term Khoisan will be used in few vague historical cases for tribes, when there is no real certainty whether the group was consistently made up of native hunter-gatherers, or whether they have assimilated with the more recently arrived Khoikhoi tribes.

◆ THE OPPRESSION OF THE SAN

For centuries the hunter-gatherer lifestyle was considered criminal. The Cape Colony was established by the Dutch East India Company in 1652. When the Europeans began to form their first settlements the areas inhabited by Bantu speaking people was comparably limited. Vast areas still belonged to the hunter-gatherer San people. Their territory included the whole Cape Province (excluding some coastal regions), Basutoland, the Orange Free State, almost the entire Transvaal province, Botswana, the Kalahari and parts of modern day Namibia and Zimbabwe. The pastoralist Khoikhoi originally came from northern Botswana, but extended their territory to southern Africa about 2,000 years ago. The San held onto their hunter-gatherer lifestyle. A few centuries later the sub-equatorial African agriculturalist Bantu people began the colonization of southern Africa, pushing the hunter-gatherers and the pastoral Khoikhoi to more arid areas, but the San hunter-gatherers retained most of their lands. (Bleek & Lloyd 2007, 26).

When the European settlers began their own expansion in the late seventeenth century, the San were already detested both by the Khoikhoi and the Bantu. At worst the San were considered to be noxious animals. The San were entrapped or hunted and destroyed with as little mercy as if they were hyenas. Only the young San girls were occasionally spared and incorporated into the tribes that captured them to live a life of constant strife. Further away from the frontier the San remained free. (Bleek & Lloyd 2007, 26).

Eventually, the number of European settlers, whether Dutch or English, increased drastically. Many of the hunter-gatherer San and pastoral Khoikhoi were extremely hard to distinguish either based on their subsistence and language. Therefore, there is a common word Khoisan, which was used to describe both of these groups. It became impossible for the farming Europeans and for the indigenous hunter-gatherers, who neither cultivated the ground nor owned domestic animals, to live side by side. Even the Khoikhoi including the Griqua (offspring of European and Khoikhoi, also known as bastards) abandoned the coastal South Africa giving way to Bantu people and even more European settlers. Soon the increasing number of settlers, Bantu and Europeans drove the San people out of sight. In the early nineteenth century the San were still living close to European settlers and frontier farmers even tried to induce parties of San to adopt their pastoral ways, but usually the San ended up consuming the stock presented to them. Owning an animal was extremely challenging for the San, since everything in their culture had to be shared. It was just much more convenient to kill the animal and share the carcass. The advance of Europeans, Khoikhoi and the Bantu was unavoidably followed by the disappearance of the San people. (Bleek & Lloyd 2007, 27–28).

The expansion of the European settlers was held back further up north in the late eighteenth century. The continuing disputes and fights between the settlers and Khoisan halted European expansion and many colonists were forced to leave their farms. However, these fights led to the killing of several thousand natives. In the beginning it was the Dutch East India Company (Vereenigde Oostindische Compagnie, VOC) that organized the private military units that were responsible for this terrible massacre, but after 1715 these actions were put in the hands of colonists themselves. Ironically, these units heavily depended on the manpower and tracking skills of the Khoikhoi. The Criqua were also forced to serve in the commando forces. (Smith, et al. 2000, 47).

The final blow came in 1774 when the General Commando issued a standing order to destroy the enemy, wherever found. It is still debatable whether this particular command was so straight forward, and whether the commandoes were allowed to kill on sight, but orders issued a few years later made it possible. Despite hundreds of hunter-gatherers being killed and captured, the war continued. The systematical commando sweeps resulted in hundreds of deaths and captures, but it did not solve the situation. In 1792 the Dutch East India Company decided to offer financial rewards to official commandos for every captured, living Khoisan. This policy was meant to be a humane way to solve the issue, but it only provided the motivation to organize missions to intentionally capture hunter-gatherers, only making the situation worse. (Smith, et al. 2000, 47-49).

◆ THE SAN OF THE DRAKENSBERG

The hunter-gatherers of the Drakensberg never resisted violently in the same manner as the recorded by the Khoisan in the Sneeuberge and the northern Karoo during the eighteenth century. It is also suggested that the hunter-gatherers of the KwaZulu-Natal section of the Drakensberg never experienced the full force of the genocide that was perpetuated against the San people in the Cape Colony and southern Namibia. (Prins 2009, 197).

After 1818 many tribal refugees began crossing the Drakensberg on their way to Lesotho and the Eastern Cape, and the local hunter-gatherers were often attacked and killed. The Dutch immigrants showed up soon after 1830 and they often stole their children, killing the parents in the process. Given the rapid expansion of the colonial borders the Drakensberg foothills ultimately became one of the entitled settlements for the Southern Sotho-, Zulu-, and Xhosa-speaking peoples. The migratory game that the hunter-gatherers depended on, were soon all shot out. The remaining San responded by initiating a pattern of livestock raiding, which eventually was forcefully avenged by the colonial authorities and their African surrogates. The brutalities inflicted on the San were horrifying. The colonial forces, mounted police and farmer commandos routed and killed hunter-gatherers especially between 1845 and 1872. (Prins 2009, 199).

The last San chief in Lesotho, known as Soai, was brutally killed and cut open by Sotho tribesmen near the upper reaches of the Orange River, probably in Sehong-

hong shelter around 1872 in present-day Lesotho. During this battle, all the men were killed but the women and children were all marched up north to Leribe, where some of them still lived in the early twentieth century. (Vinnicombe 1976, 101).

After Soai was killed there was another important incident that took place in late 1873 in the Drakensberg. In hindsight, this has proven to be most intriguing in terms of our understanding of South African rock art. The British colonial administrators had been chasing a renegade chief known as Langalibalele of the Hlubi people (a sub-section of the Zulu nation). He had fled over the Drakensberg into a maze of valleys and high ranges that constitute the Maluti mountains of present-day Lesotho. This was a territory appointed to Joseph Millerd Orpen and he joined the search. The area's terrain is extremely difficult. The highest point of the Malutis is the 3,482 meters (11,423 feet) high Thabana Ntlenyana. It is the highest peak in Africa south of Kilimanjaro. (Orpen 1874 2-3; Vinnicombe 1976, 103; Lewis-Williams & Challis 2011, 39).

When Joseph Orpen began inquiring about procuring efficient scouts to help him on his task, he heard about a young San man called Qing. He had escaped few years earlier when his tribe living in the Malutis had all been exterminated. Qing was a son of the chief and was employed as a hunter on the Orange River. Qing and Orpen became friends, although his hunting often interrupted their mission. When they sat down over camp fires Orpen encouraged Qing to talk about the imagery depicted in local rock paintings, some of which Qing showed and Orpen copied on their route. Many of the important features for further interpretation of South African rock art comes directly from Qing. (Orpen 1874 2-3).

◆ BLEEK AND LLOYD

This valuable information also reached the German linguist Wilhelm Heinrich Emmanuel Bleek and his sister-in-law Lucy Lloyd in Cape Town and provided them with valuable information about the connections between painted images and the beliefs they embodied, many of which corresponded with myths told by the /Xam. Bleek had arrived in South Africa in 1857 to draft a grammar of Khoikhoi and Bantu languages (Bleek & Lloyd 2007, 28). However, from very early on he was fascinated by the vanishing culture and language of the /Xam people. Bleek and Lloyd's work remains one of the only windows we have into minds similar to the last people who practiced rock art in southern Africa.

The hunter-gatherers that lived in the Drakensberg mountains were the last people to produce rock paintings in Africa. Culturally these people might have been very similar to the /Xam people. It also appears that they were rather similar to the recent hunter-gatherers that still inhabit areas in the Kalahari desert. These people still partly hold onto their traditional beliefs and still practice hunting and gathering, but they never produced rock art. The Drakensberg hunter-gatherers were the last ones.

The remaining San people were already scattered in the wildest and most inaccessible parts of the country far way from where Bleek was stationed. Fortunately

for Dr. Bleek, Cape Town's Breakwater convict station had several of these San hunters in their custody. The sentence of two of them had nearly expired and they were too unfit for hard physical labour. The local authorities released these two /Xam men into Bleek's custody at his residence in August 1870, on condition that he would lock them up at night until remainder of their sentences expired.

Bleek's sister-in-law Lucy Lloyd, who was very patient and showed an untiring commitment for the task, also happened to have a good ear for this amazing language. Bleek and Lloyd worked relentlessly mastering the /Xam language, one of many languages spoken by the San people. Symbols were adopted to represent all the clicks and other different sounds of the San language and eventually they could write down exact words used by the San and to have these written words checked by repetition. (Bleek & Lloyd 2007, 31).

The /Xam teachers were also eager to teach their knowledge to Bleek and Lloyd. The teachers thought that it would be important for the future of their own culture if the world could hear their own story. While Bleek was writing down the /Xam grammar, Lloyd wrote down the personal histories, the everyday activities, rituals, beliefs and myths of their /Xam teachers. All of Lloyd's notes are written down in now extinct /Xam language including English translations. Bleek and Lloyd amassed some 12,000 pages of notes, which offer a window into the minds of extinct /Xam people.

Bleek and Lloyd were aware that the contemporaries of the /Xam people still produced rock paintings and rock engravings, also known as pictographs and petroglyphs. However, neither of them had ever visited the rock art sites where the freshly made paintings would have still been bright and engravings freshly carved. They had only seen black and white copies. These copies were poor in quality, but in 1875 geologist George Stow brought full color copies that he had produced himself into Cape Town¹. Bleek had considered the /Xam mentally inferior to Europeans just like a regular colonial scientist during those days, until he saw these colorful copies of the rock paintings. Lewis-Williams reminds us that Bleek and Lloyd's initial belief in the inferiority of the /Xam people was thoroughly contradicted by the beauty of these paintings. Bleek acknowledged the privilege he had been given by being granted the possibility of understanding these images and the stories behind this cultural behavior, by being provided with the information by his /Xam teachers. (Lewis-Williams 2002a, 138).

However, Paul Bahn (1998) reminds us that statements from the indigenous 'teachers' or 'informants' might often be misleading. Some informants might provide information about things that he/she imagined or things that they think their investigator would like to hear. Sometimes informant might just invent information rather than admitting their lack of knowledge. Sometimes the concepts are impossible to translate or the meaning is lost in translation. (Bahn (1998, 221).

1 George Stow's rock art copies can be found online at: <http://lloydbleekcollection.cs.uct.ac.za>

◆ DESCENDANTS OF THE DRAKENSBERG SAN

The amazing rock paintings from the Drakensberg mountains on the KwaZulu Natal-Lesotho border in South Africa was made famous by Patricia Vinnicombe, David Lewis-Williams and Harald Pager who all began publishing studies of the paintings in the 1960s and 1970s. Vinnicombe (1976) made evident the idea that the Drakensberg San were already gone forever. After her book was finished Vinnicombe immigrated to Australia to study the local rock art. In Australia she had a better chance to study the living rock art culture, not only the one that was already gone. During the long process of writing "*People of the Eland*" (1976) Vinnicombe had acknowledge the idea that the last paintings of the Drakensberg were painted only a generation or two prior to her studies, but it was already too late for her to get any first hand explanations for their interpretation. As it happens, it sometimes takes only one generation to wipe out a culture.

In 2001 a South African anthropologist Frans E. Prins (2009) had a chance to interview Vinnicombe in the Drakensberg for a documentary film called "*Spirit of the Rocks*" (film by Peter Amman) and introduced her to a third-generation Drakensberg San descendant, Msudukeni Majola, who was also the grandson of the last rock artist known as Lindiso who belonged to the ancient San tribe know as the !Ga !ne. (Prins 2009, 191).

The Drakensberg San people, like the !Ga !ne, contrary to common belief, did not vanish. Their hunter-gatherer culture was just transformed and they ultimately assimilated with the local Khoikhoi and Bantu tribes. Although some of the people remained, their cultural practices and language was sometimes blended in together with their new hosts or in some cases permanently forgotten. However, their culture had never been very homogenous in the first place. This also concerns other hunter-gatherer groups of southern Africa who had spent millennia interacting together with the pastoralist Khoikhoi and with the farming Bantu tribes.

The Drakensberg hunter-gatherers were not hunted into extinction and never experienced wholesale genocide. The hunter-gatherers had already been interacting and interbreeding with the other local tribes, and the ones that still remained on the area found protection from the colonial forces among these people. The southern African hunter-gatherer societies are more fluid and flexible than hierarchical farming societies that are dependent on their lands. The Drakensberg San-people adapted quickly and with relative ease to the new social and political realities. According to Prins (2009) this fluidity ensured the survival of so many descendants of the ancient San into modern times. The colonial pressure forced them to adapt, and they chose to change their former identities and adopt the names and cultures of their African neighbors to continue their lives. (Prins 2009, 200–201).

The descendants of the ancient San-people still continued to practice their culture in secrecy. They remained in contact with each other and during the night when nobody could see them, they visited their sacred places, such as certain pools and rock art sites. The selectively important features of their culture were kept alive, although they kept blending in with their new neighbors. For example, they kept close a association with their rain-animal, which was transformed into the Bantu-

related water-serpent 'inkanyamba'. They also kept their intimate relationship with the healing and magical properties of medical plants. The Bantu-speaking neighbors still consult the San descendants for rainmaking and healing purposes, but they also violently accuse the San related people of strange incidents, accusing them of witchcraft. (Prins 2009, 201).

The rock art was a pivotal part of the ritual lives of the Drakensberg San. The paintings were visited frequently. The descendants of the ancient painters still visited the paintings in secret, despite the prosecutions and suppressions, but it became increasingly difficult in the mid twentieth century when the Kamberg nature reserve was established. One of the rituals still practiced is known as the 'eland ceremony', which appears to be a mix of Zulu and San traditions. It involves killing an eland and sprinkling its blood on the rocks leading up to the rock art site. This ritual is performed for the ancestors, who are respected and good fortune is requested from them. Another more intimate ceremony is performed on a pool along the trail leading up to the Game Pass Shelter, which is one of the most important sites in the Drakensberg. In this ritual, the ancestors are offered beer and burnt eland meat. This ceremony has now grown in to an annual celebration for all the San descendants of the Drakensberg. Nearly 400 San descendants and their relatives from the Drakensberg area attended the celebrations in 2007. (Prins 2009, 203).

◆ THE FUTURE OF THE SAN

The natural habitat for humans and wildlife is constantly getting smaller everywhere on our planet. This applies even in the arid environment of the Kalahari desert, which functioned as a last natural habitat for the hunter-gatherers in Africa until very recently. It was formerly believed that the San people living in the Kalahari desert were the descendants of the more ancient hunter-gatherers that used to live in more fruitful areas. However, the San living in the Kalahari have always been there. Possibly almost as long as there have been modern humans. Until recently, nobody was interested in their lands, since they were too unpredictable for farming, but very suitable for the small bands living there by hunting and gathering. However, this situation has changed dramatically since the 1950s when the first anthropologists conducted their studies among the San.

The small nomadic groups of people living by hunting and gathering demand vast areas of land. The resources these hunter-gatherers rely on, including water, plants and game-animals are all parts of very fragile ecosystem and they all live in a symbiotic relationship. The small groups of people are also part of this ecosystem. Until 10,000 years ago, our whole planet worked like this. Since the advent of agriculture, nature has gone through a massive transformation. Nature conservation projects everywhere are necessary to maintain the little areas of forests and wild-life that are still left. But sometimes, the natural environment is also inhabited by small groups of people, still clinging to their traditional way of hunting and gathering.

◆ NAMIBIA

The whole idea of a nature conservancy is complex. The central idea is to preserve the natural environment with wildlife for the future generations and to isolate farming communities from wildlife. The process of preserving nature usually excludes people living on those areas, and in most cases people are removed from those areas and introduced to farming. In most cases this makes sense, since farm animals are constantly attacked by wild predators creating tension between people and predators, resulting in lions, leopards and other predators being shot and poisoned. Farming also takes up a lot of land and transforms the natural environment, often requiring much more nutrients from the soil and plenty of water.

However, in some cases the removed people are hunter-gatherers and they simply have no idea how to make that huge leap from their hunting and gathering into farming. It is not just a leap of diet, the whole process destroys their culture. The Ju/'hoan concept of territory *n!ore* is a very important one. The *n!ore* and its resources is their world and their whole existence, culture and ceremonial practices are intertwined with their *n!ore*.

In Namibia, the last remaining hundreds of Hai//om hunter-gatherers were forcefully removed from their ancestral lands in Etosha National Park in the early 1950s. The Hai//om were cut off from the appointed to 'Bushmanland' (contemporary Nyae Nyae or Tsumkwe District in Otjozondjupa Region), which was inhabited by the Ju/'hoansi. The Ju/'hoansi living in the 'Bushmanland' were encouraged to move into a governmental outpost called Tsumkwe, which was set up by the South African apartheid government in the late 1950s. The Ju/'hoansi were given food support and educated in Western housekeeping and other simple tasks. Quite soon the Ju/'hoansi became addicted to alcohol and horrible cases of domestic violence shook the whole population.

In the early 1980s some of the people began moving away from Tsumkwe, since it clearly did not offer a better future for its inhabitants. John Marshall (son of Lorna Marshall) who had been intimately involved with the local people since their first visit in 1950, began helping the people to find better ways to survive. Marshall initiated the first 'cattle fund', which later grew into the Nyae Nyae Development Foundation (NNDNF) and the Nyae Nyae Farmers Cooperative (NNFC), which is now called the Nyae Nyae Conservancy (NNC). These operations have been effective in ensuring better legal rights for their land ownership. Marshall has been very critical towards creating a plastic stone age reserve for the Ju/'hoansi that would prevent them from having livestock. According to Elizabeth Marshall Thomas, it was up to Ju/'hoansi themselves what they thought was the best way for their subsistence (Marshall Thomas 2006, 302).

After Namibia finally won its independency in 1989 some pastoralists from adjacent districts began bringing cattle illegally into the Nyae Nyae. NNFC was also important organization involved establishing the Working Group of Indigenous Minorities in Southern Africa (WIMSA). The contemporary area of the Nyae Nyae Conservancy consists of 9,003 square kilometers. The northern part, which today functions as Khaudum National Park was established as a game reserve in 1989

and therefore taken from the Ju/'hoansi. Since the 1950s the entire ecosystem has gone through drastic changes. The number of game animals plummeted and elephants, which never belonged there, migrated into the area. These changes and increased farming have also changed the vegetation leaving less edible plants for the Ju/'hoansi to forage. Since the early 2000s the Nyae Nyae Conservancy has re-introduced more game animals, including hartebeest (*Alcelaphus buselaphus*), gemsbok (*Oryx gazella*), springbok (*Antidorcas marsupialis*), wildebeest (also known as gnu, *Connochaetes*), kudu (*Tragelaphus strepsiceros*), zebra (*Equus quagga*), and eland (*Taurotragus oryx*) into the area. Poaching is rare in Nyae Nyae, but recently intruding Herero farmers have posed a new threat by entering the area with their cattle.

Although it superficially appears that the Ju/'hoansi are well secured on their lands, it is more or less a false perception. There is a lot of poverty around Tsumkwe. Traditionally being poor was not a problem, the Ju/'hoansi only needed knowledge of useful plants and animal behavior and they had everything. But the environmental conditions and the natural habitat are completely different from what they used to be. The villages are set and their nomadic lifestyle is no longer possible anymore. Even if some villages are more remote and have better resources, there is still not enough food for subsistence built exclusively on hunting and gathering. When the resources are scarce, the only way out lies in adopting the more modern ways.

◆ BOTSWANA

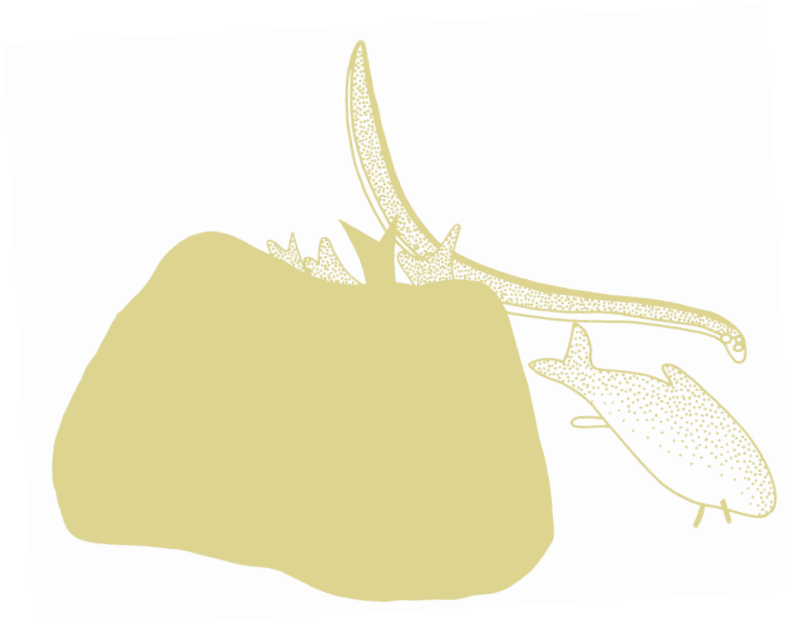
The San in Botswana have had it much worse in recent years. As I was planning my field studies among the San, I planned travel among the !Xo people in Botswana. But as I was assisted with generous help from Louis Liebenberg, he informed me that the government of Botswana had made all hunting illegal since January 2014 (L. Liebenberg, personal communication, January 23, 2014). What happened was that they essentially made hunting and gathering illegal. Private game ranches, however, are conveniently exempt from the ban. The San are now faced with arrests, beatings and torture, while international trophy hunters are welcomed.

It has later become obvious that the Central Kalahari Game Reserve lies in the middle of the richest diamond area in the world. Since then the government has been evicting the San from the reserve in three big clearances in 1997, 2002 and 2005. In these clearances almost everyone was transported out and their villages were destroyed, their school and health clinic were closed, and their water supply was destroyed.

George B. Silberbauer (1981) executed the grand 'Bushman Survey' in the area between 1958 and 1966 and suggested to the British protectorate of Bechuanaland (the colonial Botswana) that a 52,000 square kilometer game reserve be established in the center of the Kalahari Desert. As a result The Central Kalahari Game Reserve was proclaimed in 1961. Illegal poaching had endangered the existence of the animals and people living in the area. Hunting and gathering was allowed for the San people, but their access was restricted.

The Central Kalahari Game Reserve remained as a homeland for the hunter-gatherers. Silberbauer returned to support the rights of the San in 2004 and continued to help them until 2006, when he unfortunately passed away. He acted as an expert advisor and witness in the successful case before the Botswana High Court to reinstate traditional settlement and hunting by the San in the Central Kalahari Game Reserve.

In December 2006 the San were given constitutional rights to live inside the reserve. Since the legal decision to let the San live free within the game reserve, the government has done its best to obstruct the manifestation of this decision. In 2010 the San people demanded legal rights for having access to water inside the reserve. The case was dismissed. In 2014 Botswana opened a diamond mine in the Central Kalahari Game Reserve and the last hunter-gatherers were evicted.



4. The Rock Art of Namibia

This chapter gives a general view of the Namibian rock art, which is well studied by the German scholars. Namibian rock art is also a bit different from the South African rock art, which forms the main visual evidence to support Lewis-Williams's argumentation. This is important, since we could suppose that the hunter-gatherers who made the Namibian paintings and engravings would actually be more closely related to the San of the Kalahari, and their cultural practices are used to interpret South African imagery. The same shamanic approach seems to occasionally fail when applied to Namibian rock art. Sometimes we can find similar aspects and motifs which are described in South African rock art, but the bulk of it seems to escape these explanations. The Namibian rock art seems to depict more everyday life, tracking and hunting, than elaborate cosmological travels and supernatural beings.

German topographer Reinhardt Maack was surveying the upper reaches of the highest mountain (2606 meters or 8,550 feet) in modern day Namibia during the hot summer months in early 1917. The mountain, commonly known as the Brandberg (Afrikaans, Dutch and German for Fire Mountain) is known to local Damara (Khoikhoi) pastoralists as the Dâureb (burning mountain). The Herero (Bantu) farmers call it Omukuruwaro, which also means fire mountain. Maack was making his way down the Tsisab gorge and he was desperately dehydrated, famished and hyperthermic. To get away from the merciless heat in this scorching environment he crawled into the shade that was cast by one of the grottos in the Tsisab gorge.

◆ THE WHITE LADY

Dâureb/Brandberg stands out distinctively from the Namib gravel plains as a huge landmark, it is even visible to the naked eye from the Atlantic coast c. 70 kilometers away. The names given to this granite massif in Damaraland, in the northwestern Namib Desert, are very descriptive, as every evening the setting sun paints it with flaming red colors. Climbing the gorges of this amazing mountain is an equally scorching experience. The mountain rarely gives you any natural shade and the climber is always exposed to the beating sun and blazing hot rocks surround you everywhere. The first time I visited the Tsisab gorge in May 2010, I had serious issues with the climbing and especially with the heat. My friend sculptor Andries Fourie shared my discomfort, but our Namibian friend, artist Nicky Marais just kept on leaping from rock to rock and laughing at our misery together with our appointed guide. In December 2014, however, the whole experience was much more bearable, although the weather was much warmer.



Fig. 4. Tsisab gorge, Dâureb/Brandberg, Damaraland, Namibia. May 2010.

The mountain looks like a huge, single, towering piece of red, blazing granite that was thrust through the desert floor by underground giants. Actually it is a granitic intrusion c. 23 kilometer wide. It was formed about 130 million years ago when liquid rock was slowly pushed up from the depths of our planet. The softer rock surrounding it has gradually eroded revealing this magnificent massif. The intrusion was caused by the same volcanic events that caused Brazil to depart from its Namibian neighbor (Schmitt, et al. 2000).

BACK IN 1917, it is difficult to imagine Reinhardt Maack's astonishment when he noticed the beautiful paintings of humans, animals, therianthropes and skeletons marching from right to left along the wall of this hollow. The central figure of this panel is painted in pinkish-white and brown, decorated with several beads and body paint, carrying a bow and arrow in one hand and a cup or a flower on a stem in the other hand. He made a sketch of the main figures of this panel in his notebook and later finished a larger color copy with notes saying that: "*The Egyptian-Mediterranean style of all the figures is surprising.*" Thus he gave birth to the persistent belief that these paintings were somehow made by ancient Europeans. (Pager 2008, 9).

The French prehistorian Abbé Henri Breuil, the prominent authority of the Upper Paleolithic art of the early and mid twentieth century saw Maack's sketches in the late 1920s. And through his contacts in southern Africa he was able appoint Dr. Ernst Rudolf Scherz to take some photographs of it for more accurate inspection. Breuil received the photographs in 1937.

The Archaeological Survey of the Department of Education of the University of Witwatersrand in Johannesburg in South Africa employed Breuil as a researcher, from 1942 to 1951. He also held the post of associate professor at the university, but it was not before 1947 that he was finally able to visit the Dâureb/Brandberg himself together with Scherz. He became equally sure that the paintings of the 'Maack's Shelter' were made by Europeans. He made two more trips to Dâureb/Brandberg, one in 1948, and the last one in 1950 (Aczel 2009, 125).

◆ OMANDUMBA WEST, ERONGO REGION

Abbé Breuil visited southern Africa several times and he was not only interested in 'the White Lady'. He made several trips to Southern Africa and studied many sites in modern-day Namibia. There are some wonderful rock paintings and also a few engravings on the north-western slopes of the Erongo mountains on a private farm known as Omandumba West. Harald Rust, the current owner of the farm, inherited the place from his father Ehrhart Klaus Rust. But it was his German born grandfather Godofred Gustav Rust who had originally discovered the paintings when he had acquired the farm in 1942. He became friends with Abbé Breuil, who visited Omandumba West several times. Harald still had the Breuil's book "*The White Lady of Brandberg, South West Africa, Her Companies and her Guards*" which was dedicated to his grandfather by Breuil in 1948.

THE LEOPARD CAVE at Omandumba West is also the site for the earliest evidence of domesticated animals in Namibia. According to David Pleurdeau and his colleagues (Pleurdeau, et al. 2012), there was a group of hunter-gatherer's living there with some domesticated sheep 2200 years ago. This theory is supported by 2200 years old caprine teeth that were excavated at the site. The current prevailing theory is that the early Khoikhoi herders came from Northern Botswana advancing southward and mixing with the hunter-gatherers along the way. The earliest evidence to support this comes from archaeological sites known as Toteng (Robbins, et al. 2005). The Toteng sites are located near Lake Ngami, at the junction of the Kunyere and Nchabe Rivers in northern Botswana. The evidence implies that cattle and sheep arrived in the area together approximately 2240 years ago. A layer that was dated and found to be 2,640 years old shows evidence of only wild game. Northern Botswana appears to have served as a gateway area for the distribution of domesticated livestock in southern Africa. The sheep bones from Blombos Cave, at the southernmost tip of Africa have shown that animal domestication was practiced to some extent already in South Africa approximately 1900 years ago.



Fig. 5. Central figures of the White Lady Panel in the Maack's Shelter
Dâureb/Brandberg, Damaraland, Namibia.
(scanned from Pager 2008, 12–13).



Fig. 6. Central figures of the White Lady Panel in the Maack's Shelter
Dâureb/Brandberg, Damaraland, Namibia. December 2014.

◆ DÂUREB/BRANDBERG

According to Breuil, the San rock art was acknowledged and considered to be art for art's sake and to show the trappings of hunting magic. The model of interpretation of European Upper Paleolithic art was transferred and applied to the rock art made by Southern African San people. Breuil was also committed to finding evidence of early European influences in Southern Africa. According to Breuil, Europe was the birthplace of visual culture. Breuil declared that the painting in Maack's Shelter, depicts a young Cretan girl dressed as a bull jumper, which was sport practiced in ancient Crete by young girls, thus giving birth to persistent myth of 'the White Lady of the Brandberg' (Pager 2008, 10).

These rock art sites of Dâureb/Brandberg are currently supervised by the National Heritage Council Namibia. I have only been to the Tsisab gorge twice (May 2010 and December 2014) with a guide provided by the National Heritage Council of Namibia. I have also visited the Amis gorge in 2010, but we did not have a guide and did not have enough time to locate any of the images, which are much higher up the mountain that we were able to explore. According to archaeologist Peter Breunig (1986), the Amis gorge has 65 known rock art sites. This includes the famous 'Giant's



Fig. 7. Half-animal, half-human figure. The White Lady Panel in the Maack's Shelter. Dâureb/Brandberg, Damaraland, Namibia. December 2014.

Cave' (Riesenhöhle), titled for its painting of a large ominous giant looming on top of a sequence of more typical animal and human figures. This site covers an area of c. 100 square meters and contains a total of 1,049 paintings, which makes it one of Namibia's richest rock painting sites.

The White lady panel in Maack's Shelter is located in Tsisab gorge, which is flooded by a flowing river a few months every year. The gorges, ravines, or kloofs in Afrikaans, that were used as passageways up to the mountain by the ancient hunter-gatherers, contain several rock art sites. The gorges also have natural cracks and crevices which are occasionally filled with rainwater that provided precious resources for the desert-dwelling ancient hunter-gatherers. Rain showers over the mountain can fall in isolated spots and although some areas can be bone dry, there is still a chance to find water in another place. However, some depressions in the granite might hold water for substantial periods of time providing enough water for small populations. The mountains can be seen as havens for ancient hunter-gatherers. In the dry desert, the Dâureb/Brandberg can still hold water when it has disappeared elsewhere.

According to archaeologist Peter Breunig (1989, 23) the mountains offered an oasis for the ancient hunter-gatherers providing them with bearable temperatures in the shade during hot days, and making the nights milder, since the rocks give off the warmth they absorbed during the day. It is logical that these mountains with plenty of rock art like Dâureb/Brandberg, Erongo, and Spitzkoppe but also some other sites like the Wüstenquell, which also has rock art and natural pools on its rocky hills, served as central points to the nomadic people of the region. Especially the natural spring of /Ui-//aes (Twyfelfontein) must have been an extremely special place for the nomadic hunter-gatherers.

The White Lady panel in Maack's Shelter is truly remarkable and well preserved. It depicts a group of people and animals all traveling from right to left. Some of the humans are depicted as skeletons and there is also several animal transformation images. The hike up to the site follows a soft river bed and big coarse granite rocks and it is a rewarding experience to finally reach Maack's Shelter. On both the occasions I have been there, we continued hiking further up on the gorge to see other rock art sites. Maack's Shelter is the first site and others are higher up on the gorge. The terrain gets a bit worse after Maack's Shelter, but there are several sites including some images of various types of fauna, and also giraffes depicted as rain animals, some supernatural creatures and some interesting pictures of running hunters.

◆ GERMAN ARCHAEOLOGY IN NAMIBIA

Despite his colonial view of the cognitive and cultural abilities of ancient hunter-gatherers, Abbé Breuil was instrumental in giving birth to rock art research in Namibia. Breuil encouraged Scherz to continue studying rock art in Namibia and thus he began systematically documenting the rich collection all over the country. He even visited Cologne, Germany to apply for more funds for the project from the Deutsche Forschungsgemeinschaft (German Research Foundation) to continue his research as his full-time job. The German prehistorian Hermann Schwabedissen

considered the dating of the paintings important and in 1967 he initiated an excavation program to study the area. (Vogelsang & Eichhorn 2011, 8).

Schwabedissen sent Wolfgang Erich Wendt to conduct a proper archaeological research in 34 sites throughout the country. Wendt was unable to produce any facts about the age of Namibian rock art in general, but he found something even more astonishing. It was eventually Wendt who found the oldest dated evidence of a rock painting in the whole of Africa. The Apollo 11 Cave is situated in the Huns Mountains in south-western Namibia c. 35 kilometers up north from the current South African border at an altitude of about 1050 meters (Wendt 1976, 8).

During his stratigraphic excavations in the Apollo 11 Cave from 1968 to 1970 Wendt found seven stone plates with painted images. When the pieces were put together, two of them fitted together to form a single image (Fig. 52). The painting depicts a half-animal and half-human figure, a therianthrope, with feline features but with human legs and gemsbok (*oryx gazella*) horns. The stratigraphic position of the tablets and associated radiocarbon (C14) dates from archaeological horizon suggests that it could be 30,000 years old, but fairly certainly 27,500 to 25,500 years old (Wendt 1976, 6–7), which makes it the oldest example of figurative art ever found in Africa. During his studies in Namibia Wendt was able to produce a chronological framework of the archaeological data that has provided very useful for further pre-historic studies in Namibia.

The documentation of the known rock art in Namibia, which was conducted by Scherz, was finally over in 1975 and it was published in three volumes in 1970, 1975 and 1985. However, he was unable to include the vast amounts of rock paintings in upper reaches of the Dâureb/Brandberg and he decided to send Harald Pager to complete this mission.

Pager had previously been documenting the paintings in Ndedema Gorge in the Drakensberg mountains in Kwazulu-Natal in South Africa. Pager began his work in 1977 and worked in the extreme conditions of the mountain for eight years accompanied by two Ovambo assistants. He was able to produce more than 43,000 individual copies of 879 rock art sites with detailed information of their locations. (Vogelsang & Eichhorn 2011, 8).

Peter Breunig is currently the head of African archaeology in Goethe University in Frankfurt. He has conducted several excavations in Namibia. He was appointed to Dâureb/Brandberg to accompany Pager's work and to augment the data contained in the rock paintings. It was also hoped, that Breunig would eventually also provide clues of the age of these paintings and determine their archaeological context (Breunig 1986). Breunig began his excavation from the Amis gorge in the Giant's Cave site (Amis 10), right under the Giant panel itself. He was hoping to locate some particles of paint preserved in the 1,5 meter of sediment.

There was a small fragment missing from the panels and this piece was recovered from the sediment underneath the painting. The excavated deposits dated back to 2750 years ago (Pager 1989, 35). Breunig came to the conclusion that there were significant numbers of hunter-gatherers living in the gorges of the Brandberg mountains about 3000 years ago. Therefore, the paintings were done by ancient hunt-

er-gatherers, possibly related to contemporary Kalahari San before the Khoikhoi pastoralists came to Damaraland some 2000 years ago. Breunig's article regarding the datings and of their archaeological context was published in Pager's massive book on Amis gorge (Pager 1989).

After Pager's death in 1985 his work was continued by another German rock art scholar Tilman Lenssen-Erz. He has collected and published the massive six-volume collection (Pager 1989; 1992; 1993; 1998; 2000; 2006) of the rock paintings of the Upper Brandberg. Lenssen-Erz also devised an accurate scientific method for copying and documenting rock art. These methods are explained in detail in his article published in the first volume of this magnificent collection (Lenssen-Erz 1989). This collection remains the most comprehensive collection of documented rock art anywhere in the world. Despite the huge effort everyone has gone to during the past hundred years during which the Western rock art scholars have been aware of these amazing paintings in Namibia, there are still several important sites which are not properly documented or published. Ironically, one of them is the Tsisab gorge, which also includes the White Lady.

Although the whole story behind the '*White Lady of the Brandberg*' is truly captivating and Maack's Shelter has become a very popular tourist attraction it is still only one shelter among hundreds of equally important rock painting sites on Dâureb/Brandberg. It is also the staggering number of amazing rock art sites, the spectacular nature of the mountain itself, and the astonishing copies made and published by Pager and Lenssen-Erz that makes Dâureb/Brandberg one of the most interesting sites of rock art anywhere.



Fig. 8. General view of /Ui-//aes, Twyfelfontein. Damaraland. Namibia. May 2010.

◆ /Ui-//AES (TWYFELFONTEIN)

Another equally important rock art site in Namibia is most definitely the Twyfelfontein (Afrikaans for doubtful fountain), which is also known by its more original Damara (Khoikhoi) name /Ui-//aes, which means 'among packed stones'. The site has the largest collection of rock engravings in Africa. It has proven to be very hard to date, but some other similar sites, like to the Wonderwerk Cave in South Africa might give us a good perspective on the antiquity of the /Ui-//aes (Twyfelfontein). The engravings of the Wonderwerk Cave have been successfully radiocarbon dated to be at least 10,000 years old (Thackeray, Thackeray, Beaumont, & Vogel 1981).

An archaeological investigation of /Ui-//aes (Twyfelfontein) was carried out by Erich Wendt in 1968 and John and Jill Kinahan conducted further studies on the rock art in the 1980s. Field research on the social history of the site was carried out by Pombili Ipinge, Bennet Kangumu, John Molin and Goodman Gwasira.

According to John Kinahan (2010), archaeological evidence of the /Ui-//aes (Twyfelfontein) suggests that constant human habitation around this area began about 10,000 years ago, when climate changed to resemble the current climatological conditions. Summer rains are often unreliable and patchy and it is followed by a long dry season. Sometimes several years might pass without any rainfall or very little rainfall. A period of warmer climate brought a new wave of hunter-gathers to this site about 5000 years ago, and these people began making the rock engravings. These nomadic people kept returning to this site for its natural spring, although it occasionally dried out.

Radiocarbon dates from the /Ui-//aes (Twyfelfontein) have suggested that the painted sites among the engraved ones were inhabited 5,000 years ago, but some of the engravings can be much older. A few engravings of cattle suggest that the last engravings were made only about 1000 years ago, when farming communities spread throughout Namibia (Kinahan 2010, 42). The engravings are executed on the flat sides of boulders of curiously red coarse-grained quartzitic sandstone. These boulders, some of them very big, have fallen down from the overhanging sandstone cliffs.

The imagery depicted in /Ui-//aes (Twyfelfontein) was first documented by Dr. Ernst Rudolf Scherz in 1950 during his massive project to document all known Namibian rock art. He ended up recording 2,500 engravings on more than 200 sandstone slabs and also found some of the rock shelters with paintings on them.

These images are extremely different from the complex San rock paintings of South Africa. One reason might be in the geographical distance, and relatively distance in time, but arguably these images were made by similar hunting and gathering group of humans, culturally very close to those of South Africa. However, the vast amounts of images and their relatively ancient age compared to many of the dated painted sites, makes /Ui-//aes (Twyfelfontein) extremely interesting.

The engravings depicts mostly animals shown in profile, usually with both fore and hind legs depicted. Some of the engravings are more rudimentary, but some of them show amazingly skillful execution of this difficult medium. The researchers have identified six different techniques, with most of the images engraved by 'shal-



Fig. 9. Engraved animals and their tracks
/Ui-//aes, Twyfelfontein, Damaraland, Namibia. December 2014.



Fig. 10. More images of Tracks
/Ui-//aes, Twyfelfontein,
Damaraland. Namibia. May 2010.



Fig. 11. The Dancing Kudu
/Ui-//aes, Twyfelfontein, Damaraland. Namibia. December 2014.



Fig. 12. The Lion Man
/Ui-//aes, Twyfelfontein, Damaraland. Namibia. May 2010.



Fig. 13. Lion of Les Trois-Frères by Abbé Henri Breuil
Volp caves, Les Trois Frères, Ariège, France. (from Bégouën & Breuil 1958, plate IX).

low pecking'. The method which is referred to as 'deep pecking' creates a rougher surface within the body of the engraving. According to Kinahan (2010, 43-44), the shallow-pecked animal spoor, which is an amazingly popular subject on this site, is often hard to define, whereas the more deeply pecked spoor is more easily recognizable revealing the species and sometimes gender.

Other engraving methods used at /Ui-//aes (Twyfelfontein) include 'false shading' which is used to create color variations on the body of the subject. This is used especially on the engraving known as the 'Lion Man' (Fig. 12). The fourth technique is known as the 'false relief', which is used to depict more elegant features such as muscle folds. This site also has a variety of 'deep ground cupules' which are made using sharp stone as a grinder to bore deep into the rock to create cup-like hollows on the rock. Another abrasive grinding method, which is used on this site includes 'flat polish', which is used to create polished effect, especially evident on the panel known as the 'Dancing Kudu'. (Kinahan 2010, 44).

The Lion Man is a very interesting piece in many respects. The lion is skillfully executed using the false shading method giving it a great illusion of depth. The idea to call it a lion man, comes from the detail related to its paws, which are depicted as paw prints, but they show five toes, instead of four. According to Kinahan (2010, 48) this relates to the idea that it is not just a lion, but a shaman transformed into a lion. What is much more striking for me, is its long tail which ends into another paw print instead of a tuft of hair at the end. For Kinahan (2010), this relates to shamanic hallucination, according to which the shamans often hallucinate of having extra limbs. For me, there could be a much more rational explanation to be found in tracking and hunting.

I also cannot help finding a relation between the Lion Man of /Ui-//aes (Twyfelfontein) and the Upper Paleolithic lion depicted in the cave know as Les Trois Frères (Fig. 13) which is one of the Volp Caves along with the Tuc d'Audoubert and Grotte d'Enlene, on the foothills of the French Pyrenees. Both of these lions have something most peculiar happening on their rear sides. Abbé Henri Breuil copied the lion with two tails, but as other copies, especially the one done by R. Dale Guthrie (2005, 275), shows, the thing behind the lion might actually be a severed human arm. The lion is also depicted with several arrows (Les Trois Frères also has a bit uncertain engraved depiction of a hunting bow) sticking out of its body. It is truly a terrifying image which depicts an era when there were not so many humans in Europe, and the nights on the Mammoth Steppe were ruled by the nocturnal predators such as lions.

FOR ME, THE most intriguing subject of the rock art at /Ui-//aes (Twyfelfontein) is definitely the huge selection of animal tracks engraved around this site and also evident in the nearby site, known as the Zieben Platten. The animal tracks are often attributed to shamanic practices (e.g. Kinahan 2010; Pager 1985; Forsmann & Gutteridge 2012), which usually involves the example from the first kill rituals practiced by the San people, in which the detached animal's foot was used to print the spoor around the new hunter to keep him on the right track in his hunts (Lewis-Williams & Biesele 1978, 129).



According to Edward and Cathelijne Eastwood (2006), the educational explanation which has also been suggested is also unconvincing. According to them, the animal spoor is highly important to the hunters. The prints serve as a directory of environmental conditions as well as animal behavior. This knowledge is utilized by the hunters to create a working hypothesis, which is then tested against the available facts. The task of hammering a mark on a sandstone rock face is very difficult even with modern tools. It must have been a tremendous task for the early hunter-gatherers to engrave these images. In my view, it was not only executed for educational purposes, although it might have also have partially served this purpose. There are also very abstracted human prints, which would not serve the educational purpose. (Eastwood & Eastwood 2006, 86).

The idea of a possible connection between the supernatural potency that was connected to the spoor of powerful animals and the idea that the rock face served as a 'veil' between our world and altered states is much more convincing (Eastwood & Eastwood 2006, 84). But I would like to propose another explanation: the tracking itself was the originator for the whole idea of these ceremonies. The actual depiction of spoor (e.g. engraved prints) is very rare in rock art, even in Southern Africa. However, I have noticed that there is much more to hunting and tracking. It is much more meaningful than previously supposed. Many aspects of hunter-gatherer beliefs, rituals and practices could be traced back to hunting, but not necessarily to the practical level of hunting, but rather to the alterations the hunting itself might produce in our consciousness.

5. Understanding Prehistoric Art

This chapter gives a bird's eye view of the Western intellectual discourse of the nineteenth century which gave birth to the acceptance of the possibility that there were modern human cultures living in Pleistocene Europe and they had complex visual culture tens of thousands of years ago. I will also relate a bit of my own experiences of Upper Paleolithic caves and about their history.

The first time that the visual achievements of the Upper Paleolithic came under public scrutiny occurred within the intellectual circles of mid-nineteenth century England. The whole idea of the antiquity of our world and the possibility of animals and humans having ancient origins had been brewing for a quite some time gaining ever more support.

The first signs of Paleolithic art came to light in 1830 from Chaffaud cave near Vienne, France. According to South African archaeologist David Lewis-Williams, the site was not recognized as ancient, because the debate was pre-darwinian. They could not put the find into context. The found objects were small objects, known as portable art (Art Mobilier). Many of the artifacts depicted animals, skulls, fish, birds, even human-like figures, and complex arrangements of parallel lines, chevrons and notches. These objects were made from bone, stone, mammoth ivory, amber and antler (Lewis-Williams 2002a, 26).

The naturalistic shift had already changed when in early 1860s French archaeologist Édouard Lartet executed excavations in Massat caves in Ariège department in France. He found more portable art, among which was a beautiful pierced bone baton, which had engravings of bears head and other figures. In contrast to the situation surrounding the discovery of Chaffaud cave's artifacts, and thanks to the increasing acceptance of human prehistoric origins, Lartet was able to recognize the significance of his find. The advances in geology had already proven the existence of Ice Age, when the world was inhabited by animals long ago extinct. The ancient and extinct animals carved on the baton combined with the animal fossil record confirmed the antiquity of these enormously old objects. Lartet's find started a new project of the re-evaluation of old sites that could possibly be pre-historic. According to Lewis-Williams, the first finds also began a new discourse of re-evaluating the mental capabilities of pre-historic 'primitive' humans (Lewis-Williams 2002a, 27–28).

LARTET'S IVORY PLATELET depicting an astonishing drawing of a mammoth from La Madeleine, a rock shelter in the Dordogne, and the publication of his article "New Researches on the Coexistence of Man and of the Great Fossil Mammifers characteristic



Fig. 14. Hall of Bulls
Lascaux Cave, Dordogne, France
© Hans Hinz / Centre des monuments nationaux

of the Last Geological Period” in 1864 proved that humans had indeed coexisted with extinct animals much longer than people had previously assumed (Cook 2013, 184). La Madeleine rock shelter is situated by the Vézère River and it is still open to public. This area is the center of some of the most astonishing Paleolithic archaeological sites in Europe.

The argument regarding the authenticity of these tiny pieces of portable art was nothing compared to what was to be expected when Parietal art (abstract images and/or images depicting real-life and/or supernatural creatures painted and/or engraved on rock walls also inside caves) started to appear. Although Parietal art was the first form of Paleolithic imagery to appear, not all rock art is painted on the walls and ceilings of deep caves.

Ancient paintings were also painted on vertical rock faces, open rock shelters, some of them painted on entrances of caves. Parietal art was executed in several ways. Some of them, like the famous ‘Hall of Bulls’ in Lascaux Cave, are enormous and executed with vibrant colors, but some of them are tiny single color images executed with only few skillful brush strokes. Some images are engraved or scratched without paint, and some of them are deeply carved to form stunning reliefs like the amazing large horse, bison and deer carvings sculpted on a rock shelter named Abri

du Cap Blanc near a small town called Les Eyzies de Tayac, which is the center of Upper Paleolithic archaeological sites in Central France.

The site, Abri du Cap Blanc, is still open to public, although the rock shelter is now enclosed inside a small museum. The carvings of the Abri du Cap Blanc are also important because they are not inside a cave. They are sculpted on an open rock face, just like more recent rock paintings are painted in southern Africa. This suggests that there might have been a vibrant visual culture on that area and there might have been plenty of paintings on the open rock faces as well, but they have all vanished. The last remaining pieces of evidence of this culture are the underground images, portable art including decorated tools and weapons, but also this open air site known as Abri du Cap Blanc.

The caves are certainly special places from many respects. I believe the special nature of these places might have also derailed the discourse around the origins of visual culture. It is obvious that none of the possible Upper Paleolithic paintings on open rock faces are impossible to find since the environmental changes have destroyed the evidence long ago. We can only suppose that caves were special, but we cannot know how special. Some of them were visited only a few times, but some of them much more frequently. Lascaux is particularly interesting from this perspective. It was not an actual cave originally, the painted entrance was a rock shelter leading to deeper caves. The shelter was later collapsed making it an enclosed cave.

SOME UPPER PALEOLITHIC images are drawn with bare fingers on soft mud walls or floors. David Lewis-Williams considers the images that have been executed utilizing the natural folds, cracks, and steps of the wall as a part of the image most exciting. Some of these natural forms are just enhanced with few paint strokes to bring out the hidden image of the wall. These images are often visible only when the light hits the wall from a certain angle, arguing that the presence of the human is crucial for the existence of the image. (Lewis-Williams 2002a, 28).

I was deeply moved by the amazing bison and reindeer images of Font-de-Gaume which were partially executed using the natural contours of the cave. This cave is one of the three caves, together with Altamira and Lascaux, with polychromatic paintings. Font-de-Gaume is the only one of these three with limited public access to the actual cave. There are good copies with public access made of both Altamira and Lascaux. The paintings in Font-de-Gaume have faded over time since the cave was open for everyone until 1901 when a local school teacher Denis Peyrony realized the uniqueness of this cave. Peyrony also discovered another cave nearby known as Les Combarelles, which is covered with hundreds, maybe even thousands of Paleolithic engravings.

Font-de-Gaume is right next to a small town of Les Eyzies and it was frequented by people trying to find a secluded place for all sorts of secret reasons. Because the site had been open and frequented by people throughout the millennia, some of the images are badly faded and quite difficult to see. However, the knowledgeable guide Jean-Marie Pelletant that our group was privileged to have in this extremely narrow cave, used a flashlight and a laser pointer in a way that enabled us all to see the



Fig. 15. Bison
Font-de-Gaume, Dordogne, France
© Olivier Huard / Centre des monuments nationaux

amazing beauty of these images. I was amazed when I asked Pelletant if one of the holes on the rock face was bison's eye. He corrected me by lighting the place where the real eye was. The eye of this bison was beautifully carved and polished. It reminded me of the Greek and Roman statues with beautifully carved and polished eyes with life-like expression. I was stunned to even think how these painters were able to do this. The combination of using the natural formations of the rock face, and skillfully working it by carving and painting it, is truly amazing and skillfully executed.

◆ THE FIRST FINDINGS

The story of the first finding of Paleolithic parietal art is very well known. Amateur archaeologist Marcelino Sanz de Sautuola was excited about prehistoric portable art after seeing some examples at the Paris Worlds Fair in 1878. After discussing the matter with French prehistorian Édouard Piette, he began to examine the cave on his own property in the Province of Santander on the northern coast of Spain. He was trying to find small portable art and other objects in his excavation of the entrance to the Altamira caves, but instead his young daughter Maria found the now famous bison images painted on the cave's ceiling.

De Sautuola was convinced that he had discovered an unknown ancient art form, but he was also aware that to claim this would spark controversy. After all he was an amateur confronting the scientific world. At first, the site aroused tremendous interest. In 1880 de Sautuola published a booklet titled "*Brief notes on Some Prehistoric Objects from the Province of Santander*" in which he described various findings around and inside the site.



Fig. 16. Les Eyzies de Tayac
Dordogne, France. August, 2014

The young French archaeologist Émile Cartailhac, who was the pre-eminent authority in the field, did not accept the authenticity of the find. His word was plenty to turn everyone against de Sautuola. Cartailhac even refused the invitation to visit the actual cave. Instead of visiting the cave himself, Cartailhac sent another French prehistorian Édouard Harlé to see it. Cartailhac published Harlé's report in 1882 declaring that there were two options: de Sautuola was a victim of a forgery, or he had forged the paintings himself.

De Sautuola was only faced with cruel criticism. The astonishing Altamira did not fit into the mindset people had of the brutal, savage and primitive people of the Paleolithic. People just could not wrap their heads around the fact that Paleolithic people were great painters. The find was declared fake.

De Sautuola was embittered by the experience of losing his fame and he died prematurely in 1888. The Western mindset and scientific community was not ready to accept the new view of the brutal Paleolithic humans. The skeptics demanded more data, because nothing even remotely similar had never been found before (Lewis-Williams 2002a, 31–32).

IN 1895 A farmer was tidying rubbish in front of a stone shelter in La Mouthe, only two kilometers south from Les Eyzies, France. He accidentally opened a entrance inside an underground passage with an image of bison painted on its wall. Later in 1899 prehistorian Émile Rivière found a prehistoric tallow lamp with a head of an ibex engraved on it. This elaborate and decorated technology had been used to illuminate their way through the dark passage.

The Difference between Altamira and La Mouthe caves was that the entrance to La Mouthe had been blocked by an ancient landfill. The evidence started accumulate proving that Paleolithic parietal art was genuine. In 1901 local school teacher Denis Peyrony who had realized the uniqueness of the Font-de-Gaume cave and also discovered Les Combarelles, which are all very close to each other close to the town of Les Eyzies, invited his friends Louis Capitan and Henri Breuil, famously know as Abbé Breuil a skillful copyist of the parietal art, to visit these sites.

Capitan and Breuil published a collection of drawings from Font-de-Gaume and Les Combarelles caves and declared them to be Paleolithic. Breuil used a visual examination of peeling paint and chemical analysis to determine the age of these sites decades before radiocarbon dating. However, Breuil's method gave good estimates of the dates. The evidence to prove the existence and the nature of Paleolithic art began to appear more convincing. Breuil was an astonishing copyist of the Paleolithic rock art and spent his whole career copying, publishing, and also lecturing about the meaning of the Paleolithic paintings.

◆ PROBLEMS WITH DATING

The dating of the Paleolithic findings was very arbitrary in the nineteenth and early twentieth century. People had no clear sense of when this 'Paleolithic era' took place exactly. When did it start and end? They had no way of answering these questions. Examining the strata in caves can produce relative answers (the lower down the stratum, the older it should be), but producing a correct date was impossible during those days.

American physicist Willard F. Libby revolutionized the whole field of archaeology with his radiocarbon dating technique in the 1950s. Libby discovered a natural clock found in every natural substance. The only downside with this clock is that it fades away gradually and eventually it stops ticking after about 40,000 years. Radioactive isotope decays within a certain period of time. This rate of decay is precisely known. The favorable measurement for this is half-time dating. It takes 5,000–6,000 years for carbon-14 to half its number of atoms. After ten half-lives the number of atoms is so small, that it is practically all gone.

For specimens older than 60,000 to 70,000 years carbon dating is useless (Higham 2011, 235–236). Because of this problem, the beginnings of the Paleolithic still remains unclear and controversial. Thomas Higham (Higham 2011) from Oxford claims that there is a general failure in early radiocarbon dating methods relating to our knowledge of the events that took place in Western Europe during the Pleistocene. According to his experience, most of the dated specimens have been contaminated and resulted in much more recent dating than they should probably have shown.

However, the evidence strongly suggests that the Upper Paleolithic era, the time when humans already produced paintings, engravings and portable art in Central Europe, happened when they arrived in the region around 45,000 years ago and the practice lasted until about 11,000 years ago, when the Pleistocene ended, the hunter-gatherers vanished, and people began farming and raising domestic animals.

◆ ART REMAKING THE EXPERIENCE OF THE COMMUNITY

Visual images, stories, songs and many other forms of human expression, whether we choose to call it art or something else, have played an important role in transporting public experience for the scrutiny of future generations. The visual evidence of human expression tells us about the minds of past generations. Even today, artists work according to their experience and background. Life in the world changes all living organisms, and this experience drives all organisms to express themselves. Humans are exceptionally talented this way. Humans can tell difficult stories using complex metaphors through art. Artists of many mediums can alter our minds and change the way we act. By using their background and experience as a source for their work, artists produce expressive renditions of this experience and background. Audiences in turn can learn from the artworks and gain new experiences from them. And these new experiences can change the way they act in the social world.

Artworks are representations of human society and interaction. They are not just the product of a subjective individual. Artistic expression has its meaning in human activity. Humans make interpretations according to their experience. The conceptual interpretations stem from their bodily activity with other humans and their accumulated experience. Art is an expression of human experience that helps us to understand our abstract social environment. The idea of art as an expression of the social experience is also elaborated in the doctoral dissertation by the Finnish artist, researcher Mika Karhu (2013).

ACCORDING TO THE Canadian psychologist and cognitive neuroscientist Merlin Donald, the network of social regulation structures form a cognitive control of higher level. Even today, this social structure is meaningful and important for an individual person inside this network. But according to Donald, even this social cognitive network is not the governing explanation in artistic experience. He claims that we should involve unexpected, sometimes even peculiar interpretations made by individuals. Despite the careful cognitive guidance of the artist, an artwork can never control the final emotional outcome in the spectators mind. The ordinary neural processes will never provide a satisfactory explanation of the complexity of the artistic experience. (Donald 2009, 12).

Donald encourages us to ask: How art has enriched and modified human cognitive processes in personal and social levels? Cognitive sciences represents only one peculiar research area of the whole spectrum we can use for studying the world and its inhabitants. Art is not always logical, sometimes it attacks us through senses, passions and anxieties. We might expect that even prehistoric images carry this aspect of non-logic to some extent. Today's artist tries to control the artistic experience but can only vaguely affect the way the spectator's mind gathers and processes the experience provided. Simultaneously the spectator must use his or her own experience and background to reflect the artist's intentions. The scientific challenge is to interpret the cognitive perceptual source and its impact on the interpretation. (Donald 2009, 13).



6. The Shamanic Approach

This chapter will give a general view to the hypothesis's of South African archaeologist David Lewis-Williams related to my own thesis. One of his central ideas is the speculation that the “people of the Upper Paleolithic people harnessed what we call altered states of consciousness to fashion their society and that they used imagery as a means of establishing and defining social relationships” (Lewis-Williams 2002a, 10).

The background for this claim is that more recent shamanic hunter-gatherer cultures have behaved in a similar manner. But can we really use them as living evidence to support archaeological ideas? Can we use the contemporary hunter-gatherer cultures as parallels to the Upper Paleolithic cultures?

Lewis-Williams continues a century-old tradition of rock art research. In this chapter I will briefly present some of the key figures who have tried to decode this ancient enigma. I will also partially narrate the events that led Lewis-Williams to his conclusions. In this chapter I also ask if we could find a reason from the hunting methods of our early ancestors, which could have led to the evolution of shamanic practices and even influenced the subjects depicted in the earliest rock paintings and sculptures.

David Lewis-Williams is well known for the intriguing views he introduced to the field of cognitive archaeology. According to archaeologist Colin Renfrew (1982) if we want to know about human history, we must turn towards archaeology, but archaeology cannot give answers to all of the important questions, like whether some ancient artifacts were meant for everyday activity or whether they had some sort of religious qualities (Renfrew 1982, 19). The impressive work by Lewis-Williams fits into this category. He has searched information where it has been available using a combination of neurological and ethnographic studies to understand archaeological evidence.

◆ MIND IN THE CAVE

Lewis-Williams himself refers to his book “*Mind in the Cave: Consciousness and the Origins of Art*” (Lewis-Williams 2002a) as the culmination of 100 years of Upper Paleolithic research. The Upper Paleolithic, or the Late Stone Age, roughly refers to the era beginning when modern humans came to Central Europe c. 40,000 years ago and it lasting until the advent of agriculture c. 10,000 years ago. This era also coincides with the end of Pleistocene and the last glacial period (popularly known as the Ice Age), which ended c. 11,500 years ago.

The French archaeologist Emile Carthailac published his influential article “*Mea culpa d’un sceptique*” on French and Spanish cave paintings in 1902. It was the first time that the archaeological establishment officially recognized that prehistoric humans did indeed possess the mental ability to make art. This spawned the new approach to prehistoric cultures and studying Upper Paleolithic art became a respectable area of scientific inquiry. (Lewis-Williams 2002a, 7).

Even today we have no concept of what these images meant to the people who executed them. At least there is no consensus on the matter and, it still remains one of the biggest mysteries for archaeology. How did we become humans and how and why did we start to make art during this process? (Lewis-Williams 2002a, 7).

Lewis-Williams agrees with Renfrew that we must take a radically different approach if we are ever to find out why and how we started making art in the first place. We already have enough archaeological evidence and data of the material circumstances of Upper Paleolithic art. We already have fairly good knowledge, based on visual information, of what the images depict and what their peculiar conceptual context is. Lewis-Williams is in accord with Renfrew arguing that we need a novel, radical approach detaching us from what we already know. According to Lewis-Williams, “*we do not have to explain everything in order to explain something*”. We can form a birds-eye view of why Upper Paleolithic humans made these powerful images, and more specifically; what was the driving mental force behind the activity of these humans that drove them to make images inside dark and cramped caves. (Lewis-Williams 2002a, 8).

◆ SIMILARITIES BETWEEN ANCIENT AND CONTEMPORARY HUNTER-GATHERERS

One of the central arguments by Lewis-Williams is that we might find a general comprehension of the mental framework of Upper Paleolithic rock art by studying similar rock art made by more recent hunter-gatherer societies on the West coast of North-America and especially in Southern Africa. Lewis-Williams accepts that this approach cannot form a comprehensive explanation of prehistoric art, but it still remains the only approach that is possible on some level if we want to understand the processes that led humans to make images.

Since the 1970s Lewis-Williams has studied the possibility that the nineteenth century rock art made by the extinct hunter gatherers of the Drakensberg mountains, in the KwaZulu Natal-Lesotho border in Eastern Cape in South Africa, was somehow connected to their rituals and myth and that they probably held a key to understanding rock art in general as well as the Upper Paleolithic cave art in Western Europe. Lewis-Williams has suggested that the Southern African rock art depicts the visions the people experienced in altered states of consciousness. Lewis-Williams also suggests that this notion could be extended to consider the imagery of Upper Paleolithic rock art in Europe. Lewis-Williams claims that there is a possibility that people of the Upper Paleolithic harnessed the hallucinatory visions they experienced in altered states of consciousness to form their society and that they used images to create and define social relations and networks (Lewis-Williams 2002a, 10).

Lewis-Williams categorizes the different states of human consciousness in two separate categories: Primary Consciousness and High-Order Consciousness. He claims that the birth of art is tied to the evolution of high-order consciousness. This evolutionary development did not make image-making inevitable, but it was pivotal enabling it. (Lewis-Williams 2002a, 10). According to Lewis-Williams there is no bigger archaeological mystery than the underground artworks of the European Upper Paleolithic.

◆ THEORIES OF PALEOLITHIC ART

During the first half of the twentieth century Abbé Breuil's interpretation of cave paintings as simple hunting magic prevailed. His idea was that the paintings tried to bewitch the animals to ensure success in hunting. According to French archaeologist André Leroi-Gourhan (1968, 173), this idea originated from some extremely rare paintings depicting wounded or speared animals in European caves. Some prehistorians believed that the depicted animals were painted to encourage fertility of the game (Leroi-Gourhan 1968, 120).

These views were not contradicted until the 1930s when Max Raphael suggested that the arrangement of the animals could also be meaningful and it should be considered as the key for their interpretation. Max Raphael suggested that the cave paintings could depict clan animals and the clan history was painted on in the caves. His view was carried on by Annette Laming-Empeaire in the 1950s. She was highly critical of ethnographic interpretation of the Paleolithic human culture. She believed that comparison between contemporary hunter-gatherer cultural activity can provide nothing relevant studying Paleolithic culture. Like Max Raphael, Laming-Empeaire believed that Paleolithic artists were part of highly sophisticated society with a long cultural evolution behind them and a vast mythology that had evolved through times.

André Leroi-Gourhan was another important figure studying Paleolithic art in post-war France. His archaeological and anthropological methods like *chaine opératoire* have been widely used after him since the 1960s. His methods revealed new information about Paleolithic human behavior when he supervised the Princevent excavation near Paris. Leroi-Gourhan believed that combination of figures were meaningful in Paleolithic cave paintings. Leroi-Gourhan (1968) shared a view originally presented by Laming-Empeaire (1962) that certain symbols were often depicted together, e.g. bisons were often depicted with horses. Leroi-Gourhan also introduced the prevailing idea that some abstract oval, triangle and rectangle symbols depicted vulvas and abstract strokes and lines depicted male organs. His view of sexual duality of Paleolithic imagery was ultimately confronted by Laming-Empeaire in 1972 (Curtis 2006, 164).

Raphael, Laming-Empeaire and Leroi-Gourhan all believed that ethnographic evidence was totally useless for studying prehistoric art, since there was no evident connection between any society in the modern world that could compare with the prehistoric ones. They were also content to study quantitative qualities of Upper Pa-

leolithic caves, believing that if there was something to learn about the meaning of the images, it would turn out in the data. And especially Leroi-Gourhan (1968) was diligent recording data on a punch card after another with detailed information on 66 cave complexes and individual painting and engraving. Although they produced interesting theories of how cave complexes illustrated sexual duality and possible birth of symbolic language, their biggest achievement remains on recorded data, masses of data.

◆ SOUTH AFRICAN ROCK ART SCHOLARS

David Lewis-Williams (born in South Africa, 1934) is one of the few scholars of pre-history that in the late twentieth century was still keen to solve the mystery why humans started to make representational images. The most important aspects in Lewis-Williams's work are based on his knowledge on southern African San rock art, his speciality on San healing ceremonies and the ceremonial connection between altered states of consciousness experiences and rock art. His original approach to rock art began in early 1970s in South Africa, when he began studying rock art by the hunter-gatherers of the Drakensberg in KwaZulu-Natal. Lewis-Williams has published extensively on the subject since the late 1970s.

Lewis-Williams is a part of a general shift in colonial attitude that took place in the late 1960s and early 1970s in South Africa by local scholars, including Harald Pager (1971), Patricia Vinnicombe (1976) and Lewis-Williams (1977). They confronted the hunting magic theory which was usually connected to the Southern African rock art, and Vinnicombe and Lewis-Williams began researching the cultural traditions of the ancient San hunter-gatherers of southern Africa for better explanations to understand rock art of the South Africa.

Pager was a Checkoslovakian-born Austrian graphic designer who emigrated to South Africa and ended up living next to Drakensberg mountains. He developed new superior methods for rock art documentation and copying and published an amazing book on the rock art of the Ndedema Gorge paintings in (Pager 1971).

Patricia Vinnicombe (born in 1932) was born and raised in the shadow of the Drakensberg mountains in KwaZulu-Natal in South Africa. The painted rock shelters functioned as her playground and it is no wonder that she ended up trying to decipher their meanings. She had the tremendous privilege to study at the Witwatersrand university under such luminaries of paleoanthropology like Raymond Dart, who had discovered the first ever fossil evidence of our African origins, known as the Taung Child (*Australopithecus africanus*) and Philip Tobias, who was still early on his career, but ended up educating whole generations about our own history. Tobias was a close friend and colleague of Louis and Mary Leakey. It was from Dart and especially from Tobias that she learned about the ethnographic studies on the Kalahari San. In the mid 1950s while she was staying in Europe she went to meet Abbé Henri Breuil, the grandmaster of Paleolithic rock art himself, for advice, help and direction. Breuil answered:

“Don’t come to me for advice, my girl. I am an old man now, and my methods and approach are outmoded. You are young, vigorous, energetic. You just go and do the job. Develop new ideas new techniques. It doesn’t matter how you do it, as long as you do it to the best of your ability. And when you have gathered the facts then you can make a start on interpreting the material. At this stage, nobody knows more than you do.” (cited in Vinnicombe 1976, xv).

THIS WAS WHAT she eventually did. Her massive research and first-hand experience makes her work important. She began to write her study (Vinnicombe 1976) on Drakensberg rock art in 1962. She already had tremendous experience developing new methods for tracing and classifying rock art. For the numerical analysis in the early 1960s she was using similar punch card systems, what had been used by Leroi-Gourhan in Europe. However, the greatest achievement comes from her multidisciplinary approach. Vinnicombe begins her narrative with extensive account on the history of the native San hunter-gatherers of the Drakensberg and their struggles with intruders, their assimilation with the first pastoralists and farmers, but also the ultimate disappearance of the hunter-gathering subsistence from the Drakensberg.

Vinnicombe (1976, 314) also established the connection between the altered states experiences of San healing ceremonies and imagery depicted in rock art similarly to Lewis-Williams, who made his discoveries at the same time when Vinnicombe was still writing her book. They both found the neglected Bleek and Lloyd collections in the late 1960s and used them to understand the Drakensberg rock paintings (Vinnicombe 1976, Lewis-Williams 1977). Lewis-Williams’s extensively published journal articles and books on the matter made him a well known character in the field of rock art research. After the publication of *“The People of the Eland”* (1976) Vinnicombe was awarded with doctoral degree by Cambridge University. The book has been hard to obtain, but it was recently republished by the Witwatersrand university in 2009. She never continued her work on San rock art, but immigrated to Australia, where she became more deeply involved not only with archaeology, but with Aboriginal rights, land claims and welfare (Lewis-Williams 2003a, 47).

◆ THE SHAMANIC APPROACH

Unlike Vinnicombe, Lewis-Williams was not originally from KwaZulu-Natal, but from Cape Town and moved there in 1963 to teach English at Kearsney College near Pietermaritzburg, introducing himself to the nearby Drakensberg rock art. It was professor John Argyle who offered Lewis-Williams a chance to do a master’s degree under his supervision at the University of Natal in 1960s. This long work ultimately inflated into a PhD degree, which he received in 1977.

Lewis-Williams’s article *“The Syntax and Function of the Giant’s Castle rock Paintings”* (1972) dealt on the rock art of the Drakensberg. His methodology was deeply rooted in structural and quantitative methods of Leroi-Gourhan, but he was already accepting the necessity of the ethnographic approach much loathed by the French



Fig. 17. “The Rosetta Stone” Panel from the Game Pass Shelter
 Site: Game Pass I 7240, Mooi River district, KwaZulu-Natal, South Africa
 Published in Lewis-Williams 2002b, 251. Copyright Rock Art Research Institute

structuralists like Laming-Empeaire and Leroi-Gourhan. Vinnicombe (1967) and Lewis-Williams (1972), had both been using structural and quantitative methods similar to what Leroi-Gourhan had been using in Europe. Lewis-Williams (1972, 61) writes:

“Myth serves to validate primitive society, its norms, hierarchy and customs. It brings us close to the heart of a people: myths are the essence of metaphysics, not its manifestation as are shrines, taboos and rites. Like great poetry, myths communicate without their being fully understood; they take the place of abstraction. Three functions of myth will be considered in connection with the paintings: the elucidation of man’s relationship with nature; the validation of social action; and the resolving of tensions and fears.” (Lewis-Williams 1972, 61).

According to Lewis-Williams (2002b), there were two decisive moments that led to the key elements of his work. The first one took place in 1968 when he got his hands on a facsimile copy of massive linguistic and mythological collection from the nineteenth century devised by German linguistic Wilhelm Heinrich Emmanuel Bleek and his sister-in-law Lucy Lloyd. This collection, more popularly known as the Bleek and Lloyd Collection is now publicly available online (<http://lloydbleekcollection.cs.uct.ac.za>). It is a vast collection of historical, cultural and ritual practices of extinct hunter-gatherers known as the /Xam people from the central interior plateau of South Africa. Although the /Xam people did not produce the rock paintings of the Drakensberg, their beliefs and ritual practices were clearly depicted in the rock shelters also in Drakensberg, where the last paintings were made by /Xam contemporaries. The Bleek and Lloyd Collection has plenty of references to /Xam interpretations of rock art. The Bleek family were provided with copies of San rock art by



Fig. 18. Ju/'hoan hunters
Nyae Nyae Conservancy, Namibia. December 2014.

two individual sources George Stow and Joseph Orpen, The latter proved especially resourceful, because it was accompanied by explanations from a young San man Qing, who was still able to give good explanations of these images (Orpen 1874).

The second epiphany of Lewis-Williams was the realization of the meaning of one of the panels from Game Pass Shelter (Figs. 17 & 67). It has also been referred to as Rosetta Stone of ancient rock art. According to Lewis-Williams (2002b), it was around 1973 when he was contemplating on a copy produced of this particular image, when he realized that the depicted figures and the eland (*Taurotragus oryx*) were not from our everyday life. It was a depiction of an event experienced in altered states of consciousness, in other words, during a trance journey of a hunter-gatherer shaman. Lewis-Williams realized that there was metaphorical connection between the depicted events and the ethnographical recordings of their myths, beliefs and ritual practices.

Lewis-Williams was aware that in addition to the ethnographic evidence on /Xam people provided by the Bleek and Lloyd collection there was also vast amounts

of ethnographical evidence of other native hunter-gatherers like the Ju/'hoansi (formerly referred to as Ju/wasi, Zhutwasi or !Kung) in Namibia and Botswana and !Xo and /Gwi people in Botswana, commonly referred as San, or Bushmen (regional preferences and context apply on which one is preferred). The San, specifically the Ju/'hoansi, were widely studied especially by the Marshall family. There was a vast ethnographical material that could also be used to understand the ancient hunter-gatherer societies similar to the more recent ones. Vinnicombe (1976) already had used this ethnographic material for her book, but Lewis-Williams remained extremely cautious using this contemporary ethnographic material for his research on rock art that was made much earlier by a group also geographically distant to the Kalahari hunter-gatherers.

In 1974 Lewis-Williams was visiting Cambridge and had a chance to meet Megan Biesele, who had conducted extensive field research on the Dobe area Ju/'hoan hunter-gatherers in Botswana for her PhD thesis (Biesele 1975) (Lewis-Williams 2002b, 251). Together they realized that the Ju/'hoansi had plenty of cultural similarities with the extinct /Xam people. They visited the Ju/'hoansi in December 1975 and conducted a series of interviews to secure their argument. (Lewis-Williams & Biesele 1978).

DURING THIS TRIP many of the strange and cryptic words and metaphors that filled the Bleek and Lloyd Collections and Orpen's texts (Orpen 1874), were answered. The Ju/'hoansi were able to tell Lewis-Williams, that when the nineteenth century San people talked about when they said someone was "*spoiled by the dance*" (Orpen 1874, 10). The same word for spoil (kxwia) was used by the Ju/'hoansi when a knife got blunted and when someone entered a deep trance (!kia). The strange arms-back, bending-forward posture, that was often depicted in Drakensberg rock art was also performed by the dancing Ju/'hoansi. They told them that this posture was used when they demanded god to apply more *n/om* (supernatural power or potency) into their spines so that it would boil up and explode in their heads carrying them off to the spirit realm. (Lewis-Williams 2002b, 253).

Lewis-Williams received his PhD from Natal University, South Africa in 1977 and by then his hypothesis had all the pieces of the puzzle intact. His thesis was published in 1981 as the book "*Believing and Seeing: Symbolic Meanings in Southern San Rock Paintings*". The book is highly regarded in the field of ethnography. It popularized the hypothesis that southern African rock art was illustrative and was an integral part to the shamanic behavior of the ancient hunter-gatherers. These ceremonies were not only performed by the hunter-gatherers who still quite recently had painted rock paintings in the Drakensberg, but there appeared to be obvious similarities between the imagery and myths told by the extinct /Xam people and the Ju/'hoansi and other San groups still living in the Kalahari desert.

In 1988 Lewis-Williams extended his argument further to include prehistoric European rock art in his argument. After Leroi-Gourhan, there had not been anyone giving any interpretations of the Paleolithic rock paintings. No one dared to. There seemed to be a prevailing notion that we might never have any good explanations

why the paintings were made. The structuralist theories by Leroi-Gourhan had only given us the basic framework that the paintings in caves seemed to follow a pattern: Certain things were often depicted in certain parts of the cave and these things were often juxtaposed similarly in most caves. But there was no idea what was the reason for the production of rock art? And if there was a pattern or a structure, what did it mean? If it was some sort of symbolic language, no one could decipher it.

Together with another archaeologist and rock art scholar Thomas A. Dowson Lewis-Williams published an article "*The Signs of All Times: Entoptic Phenomena in Upper Palaeolithic Art*" (1988) in which they examined the current research done on more recent rock art of Southern Africa. They also acknowledged the argument that Upper Paleolithic artists had no real counterpart in present-day hunter-gatherer communities, but they proposed that a "*neurological bridge*" could be established between the people who made rock art in more recent times in Southern Africa and between the Upper Paleolithic hunter-gatherers living in Central Europe to answer this "*ethnographic despair*" (Lewis-Williams & Dowson 1988, 201–202).

Their most controversial, but also intriguing contribution to the field remains this concept of this neurological bridge. They claimed that humans in altered states of consciousness experience universal visual forms and patterns that are non-related to cultural context. Therefore, the Upper Paleolithic humans would also have been able to experience the same visual imagery as their counterparts in more recent shamanic societies, but also in Western laboratory conditions. Non-cultural illusions and hallucinations, which are possibly universal in all cultures in all times, are derived from the structure of the human optic system. This visual experience is known as the "*entoptic phenomena*" (Greek for within vision).

One of their key references was the studies conducted by Austrian-born Colombian anthropologist Gerardo Reichel-Dolmatoff, who conducted field research among the Amazonian Tucana people known for their shamanic ceremonies. Their rituals involve ingesting strong hallucinogenic herbal concoction known as the Ayahuasca (the vine of the dead), also known as yagé or yaje, used in Colombia, Ecuador, Peru and Brazil. According to Lewis-Williams (2002b) Reichel-Dolmatoff had established a link between some of the experiences of altered states and the visual motifs in shamanic societies. Reichel-Dolmatoff incorporated the neuropsychological work of American neuroscientist Heinrich Klüver and German electrical engineer Max Knoll to show that these indigenous motifs were formally parallel with the 'phosphenes', 'form constants' and 'entoptic phenomena' that Western laboratory subjects experienced in altered states of consciousness.

These visions were first categorized by Heinrich Klüver in laboratory tests in the 1920s. The entoptic forms include geometric forms such as grids, zigzags, dots, spirals and catenary curves (Lewis-Williams & Dowson 1988, 202). Traditionally the depiction of such images in Upper Paleolithic rock art had been explained to depict hunter's traps, huts, or shrines inhabited by spirits (Breuil 1952, 24). Lewis-Williams and Dowson wrote that many scholars of prehistory had already ceased trying to interpret these images and claimed that we would probably never know the meaning of Paleolithic art.

LEWIS-WILLIAMS'S IDEAS OF shamanic qualities were noticed by the French prehistorian Jean Clottes, who began to study the European cave art in the early 1970s, and already in the 1980s Clottes was considered a prominent expert on European cave art of the Upper Paleolithic. He is well known for his studies on the Chauvet Cave (Chauvet, et al. 1996), which was not discovered until 1994 and it still remains the earliest dated cave art site ever found with representational imagery in Europe.

Jean Clottes was familiar with Lewis-Williams's work when they first met in 1994. Together they visited twelve of the caves including Les Trois-Frères and Lascaux. All the caves were in different parts of France and from different periods. Lewis-Williams and Clottes published a book in 1996 (Lewis-Williams & Clottes 1996). The English edition was published as "*The Shamans of Prehistory: Trance and Magic in the Painted Caves*" (1998a). This book was followed by a joint sequel "*Les Chamanes de la Préhistoire: Texte Intégral, Polémique et Réponses*" in 2001, in which some of the criticisms were addressed.

THE CONNECTION BETWEEN hallucinations and Upper Paleolithic art is nothing new. This theory was well known already in the 1920s when neuroscientist Heinrich Klüver, who provided intimate analyses of mescaline-induced visual changes (Klüver 1926; 1966). Klüver worked in the University of Minnesota during 1920s and studied the affects of mescal buttons also documenting the nature of his own experiences under the influence of these psychoactive substances. Klüver also recognized the possible link between eidetic imagery and symbolic art of indigenous tribal communities. He noted that some visual forms induced by psychoactive compounds are similar to those used in fine arts, such as those used by Juan Miro (Klüver 1926).

Ronald Siegel, who studied experiences induced by marijuana and Lysergic acid diethylamide (LSD) was in close correspondence with Klüver during the 1960s. They both concluded that experiences like entoptic geometric figures were not substance oriented, but rather that the experience was universal regardless of the substance (Siegel 1992, 2-3). The height of scientific research and public interest on altered states, sensory deprivation and psychoactive compounds was in the 1950s and 1960s, but in the 1970s public interest started to diminish and this ultimately reflected in the research and its funding along with it (Sacks 2012, 38).

More recently Thomas A. Dowson has admitted that not all southern African rock art can be explained through shamanic interpretation, but there seems to be a lot of depictions of everyday events (Dowson 2007). This is also my own experience, which is based on my experience on Namibian rock art, which rarely involve the imagery Lewis-Williams has used as examples from more recent sites in South Africa.

Lewis-Williams's book "*Mind in the Cave: Consciousness and the Origins of Art*" (Lewis-Williams 2002a) gives a very profound account on the shamanic approach. More recently Lewis-Williams has co-authored a book titled "*Deciphering ancient minds: the mystery of San Bushman rock art*" (Lewis-Williams & Challis 2011) together with Sam Challis. This represents a more detailed account and further study of /Xam mythology and southern African rock art. In 2015 Lewis-Williams published a more detailed study explaining the San mythology titled "*Myth and Meaning: San-Bushman Folklore in Global Context*".

◆ CRITICISM

The shamanic approach to prehistoric rock art popularized by Lewis-Williams and Clottes in 1996 was greeted with criticism and controversy and it remained just a hypothesis. The reception of the idea has been much better since Lewis-Williams published his own much more detailed and elaborate account on the same subject in “*Mind in the Cave*” (Lewis-Williams 2002a). The book collects all the seminal hypothesis’ on the rock art of the Drakensberg, the ideas of entoptic imagery and the idea of a ‘*neurological bridge*’ introduced by Lewis-Williams and Dowson (1988), and the shamanic approach to the Upper Paleolithic European art introduced by Lewis-Williams and Clottes (1996).

Along with the American art historian Whitney Davis (1986), the British archaeologist Paul Bahn has been one of the most prominent opponents of the shamanic approach. Bahn asks if we can really find parallels between shamanic practices from recent times and from different geographic location to explain something that happened during prehistoric times in an environment which was totally different from what is found today (Bahn 1998, 235–247).

According to Bahn, one of the biggest problems with the shamanic approach is in its nature as a “*blanket explanation*”. The approach is too fluent and it can be used to explain basically everything. These explanations leave no place for discussion and there is no possible way to prove them wrong. The classic idea of indigenous cultures as ‘primitives’ or ‘savages’ stripped their symbolic cultures of all their meanings, which was utterly wrong. Their culture was often just as complex and advanced as ours. However, according to Bahn the pendulum has moved to another romanticized extreme, where every single mark they made is interpreted as spiritual and complex. In either case their humanity is diminished. (Bahn 1998, 246).

◆ MOVING FORWARD

However, to cite the article by Lewis-Williams and Dowson (1988, 201), I believe there are ways to answer this ‘ethnographic despair’. In my view, some aspects could actually be explained through the shamanic approach, but not everything. We could also try to accept that maybe there were some important insights that were discarded when scholars moved on from the hypotheses of hunting magic and structuralism. I would like to propose that even more aspects of this despair could certainly be understood, if we could understand the practical activities that could explain the evolutionary aspects of purposefully induced altered states. Much more could be explained if we could establish that hunting practices, which might also stand behind the ceremonies and practices, were something that was already practiced in prehistoric times, and continued during the more recent times. The hypotheses behind this idea will be explained in more detail from Chapter 8. onwards. The most fruitful aspect of the shamanic approach is that it accepts the magnitude which hallucinations and other altered states of consciousness represent in many indigenous cultures, and therefore it could be a gateway to explain some aspects of rock art, even from prehistoric times.

7. Hybrid Mind

This chapter is important for our general comprehension of the ideas presented in further chapters, since I will be explaining various aspects of how consciousness and mind are embodied in the human body and how cultural activity and environmental challenges transform our functions. In further chapters I will be writing about hypotheses connected to the altered states experiences and the origins of the first subjects depicted in earliest dated examples of figurative paintings and objects, and how human activity is tightly connected to various aspects of the functions of our consciousness. This chapter functions as a framework for the further ideas related to these concepts.



“Anyhow, by now I hope you have thought of an experience from your childhood. Something you remember dearly, something you can see, feel, maybe even smell, as if you were really there. After all, you really were there at the time, weren’t you? How else would you remember it? But here is the bombshell: you weren’t there. Not a single atom that is in your body today was there when that event took place. Every bit of you has been replaced many limes over (which is why you eat, of course). You are not even the same shape as you were then. The point is that you are like a cloud: something that persists over long periods, while simultaneously being in flux. Matter flows from place to place and momentarily comes together to be you. Whatever you are, therefore, you are not the stuff of which you are made. If that doesn’t make the hair stand up on the back of your neck, read it again until it does, because it is important.” (Grand 2000, 30).

The Canadian psychologist and cognitive neuroscientist Merlin Donald seems to agree with this anecdote by British computer scientist and roboticist Steve Grand. Donald writes: “*By the time we are adults, we do not have a single atom of our childhood left.*” (Donald 2001, 207).

Donald claims that our mind could be described as a hybrid which is formed through three major components. The gene-built biological nervous system only provides the foundation, which is strikingly similar to other primates. This genetic base is not able to develop a fully functioning conscious mind, but it needs to be altered and nurtured. This enculturation happens in two ways. The genetic layout is transformed by blending into the survival necessities of our environment, but this is only the first step. The third component of our conscious mind is provided by the social environment and interaction with other members of our society and adopt-

ing language and other symbolic systems. This enculturation is only possible due to neural plasticity.

Donald's ideas are certainly controversial according to many other scholars of the mind and consciousness, but this is very understandable. Human consciousness is a very complex concept to begin with. There is no consensus among the scientific community of how it works. The whole tradition of scientific inquiry is based on the study of the matter. Consciousness is usually considered to arise from brain activity, but how this phenomena occurs is basically beyond everyone, since the whole concept is too elusive for traditional scientific research methods.

There exists plenty of arguments for many kinds of conceptions of the nature of consciousness, but there is no consensus at sight. Some scientists claim that the whole concept of consciousness escape the tools and methods of natural science. But what is essential is that there are many scholars who have suggested that the mind or consciousness of the prehistoric humans must have been the same than the ones we have at our disposal today. This statement is based on the fact that the prehistoric human brain was almost identical to our own. Donald is one of the few writers who disagree, and he has a very good reason for it. We will continue on this idea in a while.

The hardliners of the evolutionary psychology tend to see the consciousness as a product of the wet computer (brain). They claim that our neural circuits were designed by natural selection to solve problems that our ancestors faced during our evolutionary history. But this does not explain the whole phenomena, and writers like Donald (2001) have elaborated this discussion with their own views. Donald claims that our mind is a hybrid: a combination between the genetic structure and our culture.

The enactive approach to consciousness which I am also bringing into this discussion is very close to Donald's views. According to this approach it is not the brain that sees, it is the whole animal. One of the theories enactivists are highly critical about is the computational theory of mind, which provides a description of how the brain performs several functions, but fails to explain some other key features. The computational approach explains how the brain enables perception in a person-level expression of intentional signaling, representing, inferring, guessing, but writers like Alva Noë (2004), claim that the enactive view of perception is not something that unfolds in the brain.

The enactive approach, or enactivism, claims that cognition emerges through interaction between the organism and its environment (Maturana & Varela 1987; Varela, Thompson & Rosch 1991; Thompson 2007; Noë 2004; 2009; Franks 2010). The term 'enactive approach' and the associated concept of 'enaction' were introduced into cognitive science by Francisco J. Varela, Evan Thompson & Eleanor Rosch (1991). One of the key ideas of enactivism is that the nervous system does not process information in the computationalist sense, but it creates meaning (Thompson 2007, 13). This approach is also shared by philosopher Pentti Määtänen (2015), who claims that our world is basically experienced as possibilities of action.

American cognitive scientist Alva Noë has proposed the enactive approach to visual perception. He claims that perception is not something that happens to us, or in us. Rather, it is something we do. In his book “*Out of Our Heads*” (Noë 2009) he expands his view on perception as an activity to also concern consciousness as a human activity. Perception, according to Noë, is a touch-like activity. It is a bodily skill of acquiring information. Essentially, what we perceive is what we do. (Noë 2004, 1).

One of the many supporting arguments for his thesis is the common misconception that there would be a gigantic hole in the consciousness of a blind person. However, a blind person does not experience blindness at all (Noë 2004, 3).

Noë claims that perception and action are very closely interconnected. It seems probable that our perceptive capabilities, like vision, evolved as a mechanisms for motor control. This feature is visible in more simple organisms (Noë 2004, 18). Instead of seeing the perceiver as a brain-photoreceptor system, Noë encourages us to see the perceiver as a whole animal, situated in the environment, free to move around and explore. The vision is not a snap-shot like retinal image. Instead, the brain of the animal has access to dynamic flow and it varies when the animal moves. (Noë 2004, 20).

Perception is in part constituted by our possession and exercise of bodily skills. It may also depend on our possession of the sort of bodies that can encompass those skills, for only an animal with such a body could have those skills. To perceive like us, we need to have a body like ours (Noë 2004, 25). So mind, consciousness, perception and the like are connected to our body. They cannot be detached from it. We also cannot detach the physical movement of the animal from its environment, because perception and the consciousness of the animal is connected to it.

◆ NEURAL PLASTICITY

The idea of neurological plasticity was first introduced by an American philosopher and psychologist William James in the late nineteenth-century. The neural plasticity refers to the fact that the genetic instructions to build up our nervous-systems are more or less arbitrary. Our life in the world is filled with unexpected events, and we have evolved a highly developed skill of forming our brain according to our experience. The plasticity of our brain enables the reorganization of the brain to organize itself to suit the current environment. Our nervous system responds to challenges according to our life in our own environment.

The neural plasticity is guided by our own activity and interaction with the environment; in other words by human experience. The full anatomy of our brain is not encoded in our DNA, which does not offer a rigid collection of biological blueprints. The brain does not work like an automaton when all the necessary connections are made. According to the research done by neurobiologist Carla J. Shatz our neural connections evolve gradually over time, using very primitive structures that only vaguely resemble the subtly tuned neural network of the adult brain (Shatz 1999, 151). We are born with all one hundred million neurons in our brain. That is literally, all the neurons we are ever going to get. The severe loss of brain cells starts almost on the same day we are born. Darwinian natural selection is at work inside

our brain. Neural evolution enables the most efficient connections to grow, and to improve those connections according to our experience. The least efficient connections die out, to give way to those that really do their job better.

◆ SUPERPLASTICITY

According to Merlin Donald, the full potential of the human brain cannot be realized on its own (Donald 2001, 324). Our mind and consciousness are the combined product of genetically inherited abilities that are enhanced and transformed by symbolic enculturation. This transformation of our mind is only possible for humans due to their amazingly plastic nervous system, which Donald refers to as superplasticity (2001, 208–211). Neural plasticity is not unique to humans, and it is present in most nervous systems, but the human nervous system is unique in its flexibility. Learning and creativity are aspects of superplasticity.

Merlin Donald's (2001, 117–119) concept of consciousness is very relevant to my thesis. Donald claims that human consciousness is often seen to contain three special categories. Humans can experience altered states of consciousness. Like many animals, humans see dreams and their attention alternates throughout the day between active, vigilant and wide-awake states, and those which are more passive and unfocused. Most mammals also react to anesthesia just like we do. They also react to hallucinogenic drugs. The second category is equally similar to many mammals. This is the ability to possess an unity of experience. The third category is a more human-centered view of cognition, according to which the consciousness is defined by the human ability to symbolization.

THE HUMAN BRAIN is larger than the brain of other apes, but as far as we know there are no new areas or features in human brain. We cannot find the answers to the birth of visual culture in our brain. We have to consider other factors, like socially shared cultural cognitive processes. Human culture is like a marketplace for ideas, images and emotions. The human culture is a community of mind. It enables the existence of several novel things and ideas. The community of mind enables us to create and achieve things that are impossible for other apes. Donald insists that the brain cannot be isolated from the social experience and culture.

Although humans do not have any new brain areas or cognitive modules that could distinguish our brain from other primate brains, our brain is larger than theirs. Donald claims that certain brain areas have grown out of proportion and some areas like the prefrontal cortex invaded some new territories and “*captured control of several strategic subcortical motor nuclei, and radiated into new secondary cortical regions*”. This adaptation made us aware of self-action. It also enabled control over action, resulting in the “*capacity for conscious, deliberate rehearsal, review, and refinement of action*”. (Donald 2001, 197).

The prefrontal cortex plays a very important role in the human nervous system. The enlarged anatomical loop between the cerebellum and the prefrontal cortex further enhanced our capacity for automatized skills. The cerebellum has an unusu-

al amount of connections to the prefrontal cortex referring to a very unique features of its functions. According to Donald (2001), this unusual number of connections suggests that it has an important executive role. This may have an important role in self-evaluation, long-term planning, prioritizing values, maintaining fluency and appropriate social behavior. However, due to the superplastic nature of the human brain, there might be significant differences between individuals in the organization of this region. (Donald 2001, 197–8).

◆ HYBRID MIND

Our nervous system is only the foundation for all our consciousness abilities. Our dependency on our culture is very deep. Socially isolated humans do not develop language or any form of symbolic thought and they do not utilize any symbols at all. The human brain is not a symbolizing organ, this happens only through deep enculturation. After we learn a language, we can use it to think silently in isolation, but we cannot invent this in isolation (Donald 2001, 150–151). Our nervous system has the ability to learn to utilize a complex symbolic systems, but we are dependent on other people and the enculturation process. Thus, Donald claims that we bridge two worlds and, “*We are hybrids, half analogizes, with direct experience of the world, and half symbolizers, embedded in a cultural web*” (Donald 2001, 157).

Other animals operate and survive without culture. Instead they incorporate a combination of genetic structure, which transforms and grows according to experience in interaction with the environment. But human minds have another dimension to its environment. Our superplastic nervous system is thoroughly imbued by our culture with complex customs, networks, habits and symbolic systems. According to Merlin Donald:

“We have hybrid minds. Like the monsters of Greek mythology, we are two creatures struggling within a single body. We are capable of operating entirely within that same fuzzy analogue mode that constituted the whole of the cognitive universe for our ancestors, while another part of us operates like the symbolic machines we have made. ... These two sides of our being are engaged in a constant struggle for the ownership of awareness.” (Donald 2001, 164)

The human mind and consciousness cannot be reduced only to the activity of our nervous system. We are not just our brains, we are animals moving and interacting with our environment and totally dependent on our social culture and its symbolic systems. As Donald claims: “*symbolic minds are not self-sufficient neural devices, like eyes. They are hybrid products of a brain-culture symbiosis. ... without culture, we could never have become full-fledged symbolizing organisms.*” (Donald 2001, 202).

OTHER PRIMATES THAT are educated from infancy to our symbolic culture can acquire some elements of it, but only humans can make full use of it. But just like other primates, we have no new brain regions that makes this possible, we cannot do it alone. We need someone to teach the ancient art of symbolic systems such as

language, writing, and reading to be able to use it to our own survival. Humans have the evolved capacity to acquire this, but our culture transforms the human superplastic nervous system and therefore the minds and consciousness in such a drastic way, we can assume, that someone who comes from different time and place, might have completely different mind and consciousness.

The obvious nature of the hybrid mind seems to have been neglected by some rock art scholars who claimed that the Ice Age humans had the same minds as we do. They did not. They grew up in a totally different environment and their symbolic systems were absolutely different. They had language and they used symbols to some extent, but they did not have written language or external storage devices such as written language. Their minds must have been a bit different from our own. The minds of early human ancestors that did not even have symbolic systems, such as complex language to describe historical events, might have been even more distant to us. This fact must be kept in mind as we go further into this study.

Brains are not static entities, the anatomists can only hope that certain input is processed in some distinctive brain region. The anatomical view conceals the true dynamism and deny the bagful of possibilities and the fluent sea of chaos. Our complex and variable cultures have demanded ever more neural plasticity. Only a very complex culture could have generated the kind of universe that rewarded superplasticity. Every human child is equipped to blend into its surrounding culture, whether it was a Paleolithic bear-cult or a nest of Caribbean pirates. According to Donald: *"The epicenter of this adventure is the conscious mind"*. (Donald 2001, 208–11).

Human minds are enculturated in a way very unique to our species. Our conscious minds have three major components that all play a very important role in making it all happen. These are: Genetic base, environmental consequences and deep enculturation to the culture. As Donald claims: *"We don't tend to think of our friends and families as "carriers" of cultural messages and customs, but that is exactly what they are, and they affect us early and deeply."* This process is not just superficial assimilation to a certain social environment, but a very profound transformation. Donald continues: *"symbolizing cultures own a direct path into our brains and affect the way major parts of the executive brain become wired up during development. ... cultural influences can lead to the installation of totally new cognitive architectures, such as the neural wiring diagram that supports mathematical or musical literacy."* The deep enculturation the human nervous system goes through, *"wires up functional subsystems in the brain that would not otherwise exist."* (Donald 2001, 212).

◆ MIMESIS

Although our neural superplasticity enables the deep enculturation of our conscious mind, our culture would not have evolved without the astonishing mimetic ability of our species. Helen Keller, the deaf and blind American author, political activist, and lecturer would not have acquired any of the symbolic systems without her mimetic ability. Keller suddenly became blind and deaf when she was only eighteen months old and her ability speak or even to learn common sign language was taken away. Donald uses Keller as an example of our mimetic capacity. Although Keller was unable to learn the symbolic systems through the traditional ways, Donald writes: “she had many of the gestural precursors of language. In her first eighteen months she had acquired many basic nonverbal communication skills, such as pointing and gesticulating.”

Language was totally absent from Keller’s life and her life was quintessentially mimetic. She enjoyed role-playing and explored people’s faces to feel and share emotion. When she was six years old she was using rudimentary mimetic signs to express her needs, but her gestures never enhanced further into a language with grammar, sentences or inner speech. This was before she met her teacher Annie Sullivan who became Keller’s constant companion and communicative channel. Ultimately Sullivan and Keller learned to communicate and Keller learned to read and write. From her own testimony, we know that deep enculturation freed Helen Keller’s mind. It liberated her from her prison and allowed her to think. Donald thinks that human symbolic skills must have emerged in a similar way, because: “*our modern brains cannot gain symbolizing skills without going through an external phase*”. (Donald 2001 233–251).

I had the privilege to observe how my own son learned how to communicate. He was physically extremely gifted and showed tremendous interest in enhancing his motor skills. But he lagged behind in developing his language skills. He was three years and two months old when he began to speak and it literally happened in two weeks in Goa, India. Before this episode his vocabulary consisted of about few tens of words, with some of them self-invented, but right after this two week ‘transition’ he was already using language to tell self-invented jokes. Prior to this transition my wife and I learned to understand his incredible skills of mimetic expression. It was remarkable how fluent our communication really was although he could not verbally express his needs, desires and musings.

THE SYMBOLIC SKILLS are acquired externally and therefore Donald believes they must have evolved in the same way. The origins of language must have evolved in the cognitive communities and in the interconnection and distribution of social network. The first stage, or a transition, on this road was taken about two million years ago, when the first species in our genus *Homo* emerged. This stage is titled as *Mimetic*. These creatures had to venture further away from their homes to acquire food, which was hunted and gathered and probably shared among the group. More complex tools emerged for hunting and processing the foods. According to Donald:

“The achievements of early hominids revolved around a new kind of cognitive capacity, mimetic skill ... It enabled the playacting, body language, precise imitation, and gesture. ... Mimesis enabled early hominids to refine many skills, including cutting, throwing, manufacturing tools, and making intentional vocal sounds.” (Donald 2001, 260–261).

The second transition took place later in our evolution, about half a million years ago and culminated in the first cultural behavior signs of our own species some 100,000 years ago. The human brain and vocal tract underwent major transformation during this period. Humans also began to invent more sophisticated tools and the first signs of decoration, and elaborate burials appears. This stage is titled by Donald as *Mythic*, with language and symbolic representation being the most important new features. The thirds stage, which is the *Theoretic*, was marked by the external symbolic devices and universes. This happened some 40,000 years ago, or at least the first major examples are dated to this era. This symbolic culture was further enhanced by written language, books and libraries and the internet, which has further transformed our culture, and also our conscious minds. (Donald 2001 261–262).

But the transition into the *Mimetic*, which took place some two million years ago, is the key to understanding our conscious minds as social constructions. The central cognitive issue our ancestors must have struggled with was the invention of culture as a collective means of accumulating experience and custom. According to Donald, *Homo erectus* culture was:

“... a culture of public action, without language or symbols but equipped with mimetic expressive skills. This was the birth of the actor, the tribe, and the gesture. ... Mimetic capacity has huge emotional ramifications because it involves both the conscious elaboration and the suppression of emotion.” (Donald 2001, 263).

Mimetic skill also includes some acquired cultural skills that would certainly have been important for the early *Homo*. These include precise imitation of purposeful action, such as the production of a functioning stone tool. It is not enough to simply mime the action, because we also need to understand the function of the action to learn a new skill. This brings us to another aspect of the mimetic capacity. Donald writes: “*Skill results from rehearsal, systematic improvement, and the chaining of mimetic acts into hierarchies.*” A human child, for instance, might practice novel skills for the pure pleasure of enhancing the skill. Practicing skills such as rock or javelin throwing would have been an important feature for the early *Homo*. All these features possibly gave rise to gesturing, which is also a mimetic skill. This would have helped the early *Homo* to develop some rudimentary communicative methods to enable collective projects such as group hunting. (Donald 2001, 264–265)

As the human culture got more complex and humans began to use sophisticated language our culture began to transform with increasing speed. Today’s culture is so complex that in order to become fully literate we must go through a rewiring operation, which needs years of intense education. This process, according to Donald: “*charge the functional uses of certain brain circuits and rewire the functional architecture*

of thought.” (Donald 2001, 304). According to Donald, this restructuring is comparatively radical and it is impossible to say that our conscious mind is identical to the Paleolithic humans. It is impossible to know the exact meaning of the symbols used during the Paleolithic, but we can try to understand some features that would have been closely related to their selective challenges, like hunting, and other adaptations, which improved their chances against the selective pressures.

It is hard to say what is the true meaning of some of the oldest symbolic evidence left by humans, such as the bead necklaces or carvings on a piece of ochre found from the Blombos cave on South African coast, which date back about 100,000 to 77,000 years ago (Henshilwood & Marean 2003; Henshilwood, et al. 2002; Henshilwood, d’Errico & Watts 2009; Henshilwood, et al. 2011). The only thing we can say, that this evidence suggests that there was a group of humans living on this area, who had a bit more complex culture than the ones before them. They had crossed some evolutionary threshold to become symbolizing creatures. Some scholars like Alexander Marshack (1972) have even suggested that the Paleolithic people used symbols to write down lunar cycles.

The human achievements cannot be investigated only as a feature of human cognitive abilities. Our physical and mental abilities have sprang out from the selective pressures. Some skills and abilities which were beneficial to our everyday existence, such as effective means of procuring high caloric foods, or social skills which enhanced and maintained group cohesion. The question remains how art could have sprang out from these adaptations? The most important features for this research are behavioral, physical and social. Therefore the neural processes can enlighten the basis for these features, but it cannot really answer the ultimate question.

The chimpanzee is our closest relative. We had a common ancestor some six million years ago. Our genome is almost identical. However, we have moved a long way from our chimp relatives, and this fact demands explanation. The human brain has tripled its volume, doubled the amount of neurons, and some brain areas have expanded disproportionately. However, it seems there are no new neural modules or new neurochemical transmitters. One of the most radical new features in our evolution is culture, that functions as shared storage of social information and our brain has evolved to live in that culture and partly because of it. (Donald 2009, 18).

8. Born to Run

This chapter starts off by examining some of the evolutionary stages our distant ancestors went through and how our own genus originated. Our early evolution is closely linked to environmental changes and changes in our diet. The food we eat and how it was procured and processed also changed the physiology of our early relatives.

It continues to describes how human ancestors evolved to run down antelopes in Africa. Although humans have never really been considered as important athletes in relation to other animals, our incredible capability for endurance might have played an important part in human evolution. Animals usually run extremely fast to attack or escape, but they can only sustain these explosive speed for a very short time. They run fast just long enough to catch their prey or flee for their lives. Humans are terribly slow compared to most of these animals, but we can endure a constant pace, just barely fast enough to make our prey gallop. This pace can be sustained for a comparatively long time and this endurance combined with our skill of determination and our ability to predict advancing consequences will ultimately cause the animal to lethally overheat and finally stop or even collapse. In this chapter I will briefly go through the most important evolutionary features to support this hypothesis as originally presented by Dennis Bramble and Daniel E. Lieberman (2004), which I find extremely important and useful for this thesis.

There was plenty of ethnographic evidence in this regard from various places around the world, and David R. Carrier (1984) based his ideas on this evidence and on his own observations on running adaptations on human anatomy, but Dennis M. Bramble and Daniel E. Lieberman (2004) went further, and suggested that it might be possible. However, this theory would only be without any concrete empirical evidence without Louis Liebenberg, who was the first anthropologist actually to participate a persistence hunt in 1990 with a group of !Xo hunters in the central Kalahari desert in Botswana.

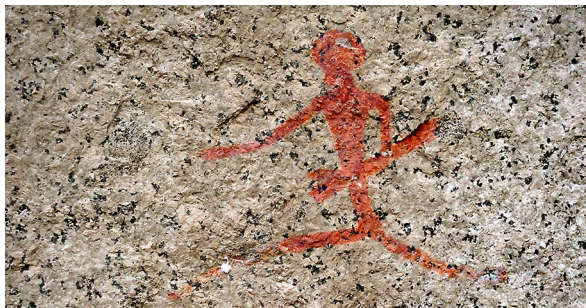


Fig. 19. Running hunter.
Tsisab gorge, Dâureb/Brandberg, Namibia. December 2014.



Fig. 20. Map of the Eastern Africa area where most of the earliest examples of our species are found

◆ OUR FIRST ANCESTORS

Humans evolved to survive in the arid semi-desert and savannahs of Africa. This was probably caused by environmental change about 10 million years ago that turned the vast rainforests of eastern Africa into more arid woodland and savannah environments (Kingston 2007). Unlike the ancestors of our closest relatives, the chimpanzees, our own ancestors were pushed outside the rainforest to live in drier conditions. Ultimately our ancestors adapted to live on foods which were originally possibly considered as fallback foods (Laden & Wrangham 2005). Instead of eating fresh ripe fruit, our early ancestors had to rely more heavily on underground storage organs (USO), leaves and fibrous stems of plants and various herbs (Lieberman 2013, 40).

Chimpanzees and other great apes still probably inhabit a much more similar environment than our common ancestors did. Our common lineage diverged about 8 to 5 million years ago (Takahata, Satta & Klein 1995; Chen & Li 2001). Our own distant ancestors were pushed out of the rainforests and adapted to live in a much more arid environment. Our distant relatives gradually evolved to walk upright, and they have been bipedal for about 4 million years (Lovejoy 1988). Walking upright can be very energy-efficient. By walking upright modern humans use only 25% of the energy used by knuckle-walking Chimpanzees (Sokol, Raichlen & Pontzer 2007). This would have been a huge advantage in ever-expanding open areas where they had to travel longer distances to obtain food (Sokol, Raichlen & Pontzer 2007). Walking upright also liberates your arms to carry more food, enabling better foraging methods. Although the physiological development of our early ancestors shows clear indicators of upright movement and longer legs, our early relatives were still very skillful at climbing trees. This suggests that they probably still spent their nights sleeping in trees, which would have been much safer in the presence of nocturnal predators.

◆ THE FIRST HOMO

The earliest examples of the genus *Homo* comes from the Hadar, Afar triangle in Ethiopia. The specimens were uncovered in 2013. Geologist Erin N. DiMaggio and her colleagues (DiMaggio, et al. 2015) presented evidence of the earliest finds of this particular individual. This find indicates that there was a group of early *Homo* living at the Afar triangle in Ethiopia at some point between 2,84 to 2,58 million years ago which is consistent with the fact that there was a considerable change in the climate around 2,8 million years ago. Change in climate about 2,8 million years ago could have pushed the hominins to adapt new methods to obtain food in the changing environment. The ability to adapt to the environment has always been important. Occasionally it leads to improved methods of acquiring better quality foods and/or improved methods of processing it. Both of these tasks demand improved cognitive skills, but in turn these improvements would have resulted in the consumption of more fat and protein, which might have enabled a bigger brain.

About two million years ago our *Homo erectus* ancestors became the first hunter-gatherers. These earliest members of the human genus had nearly modern bodies and slightly larger brains. These features helped them to not only to thrive in Africa, but also to reach out to other parts of the world. Their brains continued to grow and expand gradually. This was probably caused by two factors: good quality food and cognitive demand.

These ancient hunter-gatherers were able to obtain enough good quality foods, high in fat and protein to enable the ever expanding bigger brain, but this could not have been possible if there was no cognitive demand for this larger brain. Something they did was increasingly demanding for their cognitive capabilities, but there was also an increasing reward for that. (Lieberman 2013, 67-70).

◆ COOKING APES

A recent article by psychologist Felix Warneken and evolutionary biologist Alexandra Rosati (2015) proved that wild chimpanzees have the ability to wait for food to be cooked. It was previously known that chimpanzees prefer cooked sweet potatoes over raw ones, but since it was always accepted that they could not handle fire to cook their foods, it was merely thought that they just enjoy the soft food, which yields more calories with less effort. However, Warneken and Rosati conducted an experiment in which the chimpanzees were provided with a cooking device, but they needed to wait for their food to be cooked. This experiment proved that chimpanzees understood the relation between a small delay and the payback, which they got after a little waiting. (Warneken & Rosati 2015).

Cooking our food has probably been a very important step in our evolution. There is still little evidence indicating the moment when our ancestors began habitually cooking their foods. The hearths are extremely difficult to identify in archaeological sediments. How can we really tell if a fire was made by early humans, or was it a wild fire ignited by lightning? After all, these bush-fires are quite common in African woodlands. One find (Berna, et al. 2012) comes from the site of Wonder-

werk Cave, Northern Cape province in South Africa. A team led by Boston University archaeologists Francesco Berna and Paul Goldberg (Berna, et al. 2012) found evidence of burnt bones and plant remains suggesting that fire might have been used for cooking approximately one million years ago.

However, cooking does not necessarily need to be indicated by fire. Cooking, or any kind of food processing, whether it is by fire or by chopping, smashing, or grinding, breaks down the tissues and fibers resulting in softer food that is easier to consume and digest, and it also yields more calories. This would have resulted the human jaws and guts to adopt a smaller form. Food processing also liberated us from excess chewing. More time was liberated for other activities. Some sort of food processing was certainly used little more than two million years ago. The indicators for this kind of behavior are not found in ancient fireplaces, but the markers are found on the skeletal remains of our ancestors. (Lieberman 2013, 88–90).

British primatologist Richard Wrangham (2010) has poetically suggested that we are “*cooking apes, creatures of the flame*” (Wrangham 2010, 14). His idea suggests that it was indeed the use of fire that enabled all the key adaptations two million years ago. Our genealogy carries a mutation that made our jaw muscles smaller about 2,5 million years ago (Wrangham 2010, 42). According to Wrangham, whether it was cooking or another means of food processing, the transformation into *H. erectus* from earlier species like *Homo habilis*, was a very significant turning point in the evolution of our species. *H. erectus* had much smaller teeth indicating a diet that did not require as much chewing as it had before. Teeth actually got so much smaller in this transition, that it was the biggest change in six million years (Wrangham 2010, 98).

H. erectus also shows a smaller rib cage than its predecessors. This indicates that its digestive system had gotten smaller (Wrangham 2010, 98). Also its brain had expanded. The average brain of *Australopithecus* had been approximately between 400 to 550 grams. *Homo habilis*' brain was slightly larger ranging between 500 to 700 grams. The brain size of the *H. erectus* was 600 to 1000 grams. (Lieberman 2013, 91).

Wrangham (2010) notes that all these features indicate that *H. erectus* had adopted cooking and it had resulted in most of these features. *H. erectus* had also lost its ability to climb trees, which would have been an evolutionary trade-off for its longer legs and shorter arms. For Wrangham, this suggests that *H. erectus* did not seek refuge in the trees from nocturnal predators such as several species of saber toothed cats, scimitar cats, lions and spotted hyenas. Other large creatures such as elephants, rhinoceros, and buffalo-like ungulates, might also have posed a threat to our early ancestors. Without a small flaming fire, the African woodlands would have been a very dangerous place to sleep on the ground. (Wrangham 2010, 99–101).

WHEN WE SLEPT outside without our tents with the Ju/'hoan hunters on our trip with my wife Maija to Nyae Nyae, Namibia in December 2014, we set up three small fires that enclosed our small island of higher ground with few small trees surrounding a termite hill amidst the otherwise flat semi-arid grasslands. During the night we might occasionally wake up, make sure the fires were going, warm ourselves up, and chat a bit. Then we continued our rest. The number of possible violent threats

posed by animals was minuscule compared to the kind of nightly terrors our *H. erectus* ancestors experienced two million years ago, but it was easy to imagine how it would have been without the fire. It was a comforting thing to have.

WRANGHAM'S COOKING HYPOTHESIS appears to explain many aspects of the transition from earlier species of our hominin relatives to *H. erectus*. Cooking might have enabled smaller jaws, teeth and guts, and it might have resulted in a larger brain. Having a fire going during the nights, might have resulted in shorter arms and less body fur. Having less fur would in turn have resulted in pigmented skin to protect us from the beating rays of the sun. With more time for their exploits (free time being liberated by decreased chewing time) these creatures would have been able to travel longer distances, resulting in longer legs. (Wrangham 2010, 179–207).

But Wrangham does not go into detail, about the most important feature that was adapted in that transition. This transition is directly related to my thesis and tries to explain how *H. erectus* would have been capable having a constant source for better quality foods. During this time our ancestors were transformed from scavenger-gatherers to full fledged hunter-gatherers.

◆ ENDURANCE HUNTING

Evolutionary biologist David Carrier (1984) proposed a hypothesis according to which hominids may have been preadapted to endurance running and modern “*humans have exceptional stamina suggests that at some point in the evolution of hominids there was strong selective pressure for endurance running.*” (Carrier 1984, 487). Although humans have never really considered themselves as being important athletes among other animals, our incredible capability of endurance might have played an important part in human evolution. Humans are weak and slow compared to other animals, and no-one really thought that humans were capable of hunting large game-animals before the invention of complex lethal weapons. The problem is that there are clear signs that humans were habitually eating large game-animals long before they used complex projectiles that can kill from a safe distance. The adaptations that made our brains significantly larger were much older than the use of lethal projectile weapons. This was evident in archeological evidence, which revealed that early *Homo* was already scraping meat off animal bones.

David Carrier (1984) proposed that we did not evolve to become fast and powerful, but instead we evolved to run long distances. He suggested that game animals were faster over short distances, but that humans had more endurance and were therefore capable of exhausting them if the conditions were right. Therefore, humans could have been lethal animals due to their capability for running long-distances under hot midday sun, and ultimately exhausting larger and faster animals by forcing them to succumb to hyperthermia. Carrier noticed that very little is known of the endurance performance of other mammals, besides horses and camels, which have been intentionally bred for endurance. The endurance running hypothesis was

further studied extensively by Dennis M. Bramble from the University of Utah and Daniel E. Lieberman from Harvard University (Bramble & Lieberman 2004).

Carrier noticed that there is an extensive collection of stories of indigenous hunters around the world who had been claimed to run down their prey. The Kalahari San were argued to run down duiker, steenbok and gemsbok during rainy season and wildebeest and zebra during the hot dry season. Carrier also noted that the native Rarámuri (Tarahumara) of the northern Mexico and Navajo of the North America were also said to run after game animals until their prey collapsed from exhaustion. Also the Australian Aborigines were reported to hunt kangaroos this way. (Carrier 1984, 483).

◆ THE ENDURANCE RUNNING HYPOTHESIS

Dennis Bramble and Daniel Lieberman (2004) took Carrier's (1984) hypothesis of endurance running even further providing much required data to support the hypothesis. They brought together the evidence to support their claim that humans are exceptional endurance runners thanks to a diverse array of physiological features evident in human evolution. Bramble and Lieberman (2004) note that the reason why running has been such a poorly researched area in human evolution is because humans are lousy sprinters. Elite sprinters can sustain fast speeds like 10,2 meters per second for less than 15 seconds compared to other cursorial mammals like horses, greyhounds, and pronghorn antelopes who can maintain speeds of 15 to 20 meters per second for several minutes. Besides sprinting, humans habitually engage in endurance running. This speed of endurance running c. 2.4 – 6.5 meters per second can be maintained for several kilometers using aerobic metabolism. Endurance running is unique to humans among other primates and also very uncommon among quadrupedal mammals other than social carnivores (such as dogs and hyenas) and migratory ungulates (such as horses and wildebeest). (Bramble & Lieberman 2004, 345).

Bramble and Lieberman noticed that several human morphological features are helpful in long-distance walking, but some adaptations can only be explained by evolution for endurance running. Humans have certain structural features making them better long-distance runners than other primates, therefore walking could not have originated all of these features. Their article (Bramble & Lieberman 2004) examines the four important adaptations to enable endurance running: *energetics, skeletal strength, stabilization and thermoregulation*.

Energetics: In contrast to apes, human legs have several spring-like tendons that generate force economically. The achilles tendon and the arch of the foot and not necessary for a walking bipedal, but a crucial feature for a runner. These springs return force generated during each stance phase. The abundance of springs in human legs provide an elongated stride, making endurance running economical. (Bramble & Lieberman 2004, 347–348).

Skeletal strength: Running exposes the human body to higher stress than walking. Compared to *Australopithecus*, *H. erectus* has especially larger articular surface

areas relative to body mass in most joints of the lower body decreasing the stresses generated during endurance running. (Bramble & Lieberman 2004, 348–349)

Stabilization: Humans have adapted several features making their running extremely stable and balanced. One of the most distinctive human features is the expanded gluteus maximus. This muscle is strongly activated during running at all speeds, but not necessary for walking on level surfaces. Our head is stabilized by a nuchal ligament, which connects our neck with our arms. (Bramble & Lieberman 2004, 349–350).

Thermoregulation: Running creates so much endogenous heat, that adaptations to prevent hyperthermia are crucial. Cooling down core temperature by intense sweating is a very effective adaptation. Humans also have reduced body hair which further increases the cooling process. Another important adaptation to dissipate metabolic heat is a narrow, elongated body form. Increased cerebral circulation is an adaptation to further enhance the cooling process of our head. (Bramble & Lieberman 2004, 350).

THE MORPHOLOGICAL ENDURANCE running adaptations were visible in *H. erectus* almost two million years ago. These adaptations include longer legs, larger hindlimbs and vertebral joint surfaces, a narrower waist and shorter toes. (The energy efficiency of shorter toes in endurance running was further studied in Rolian, Lieberman, Hamill, Scott & Werbel 2009). Bramble and Lieberman conclude that several features that enabled endurance running were not by-products from adaptations to long-distance walking as previously suggested. (Bramble & Lieberman 2004, 351).

The mass-spring mechanics of running require structural specifications for energy storage and stabilization. Long-distance walking cannot explain these adaptations, because they have little role in walking. Sustained running poses extreme mechanical and thermoregulatory challenges far beyond the requirements of walking. Expanded joint surfaces and mechanisms of heat dissipation (sweating, hairlessness, cranial cooling systems) are also useful for long-distance walking, but necessary for easing mechanical stress in running and dealing with endogenous heat produced in running. (Bramble & Lieberman 2004, 351).

◆ SYSTEMATIC SCAVENGING AND ENDURANCE RUNNING

Dennis Bramble and Daniel Lieberman (2004) suggested that early *Homo* was adapted to run long-distances in hot and arid environments. They acknowledged the fact that this feature might have been helpful for exploiting a more protein rich diet starting about 2.6 million years ago. Endurance running might have played a role in scavenging meat from carcasses killed by other predators.

Early hominins probably only did some casual scavenging to supplement their mainly plant foods. According to Daniel Lieberman and his colleagues (Lieberman, Bramble, Raichlen & Shea 2009) scavenging is actually rather difficult since natural carcasses are comparatively rare in the wild. Their study notes that in Kruger National Park in South Africa hyenas typically arrive at lion kill sites in less than

30 minutes. There would not have been much left for diurnal scavenger, therefore systematic methods were necessary for scavengers (Lieberman, Bramble, Raichlen & Shea 2009).

According to South African anthropologist Louis Liebenberg, it is possible that early hominins developed the skill of systematic scavenging. Instead of just randomly stumbling upon a carcass, systematic scavenger can read natural signs to find the carcass before others do. This increases the ability to obtain meat substantially. Liebenberg has recorded hunter-gatherers in the Kalahari who frequently followed circling vultures to determine if there might be available carcasses. Several vultures flying in a certain direction is a clear sign of a recent kill. Several vultures circling around the kill site indicates that they have already found a carcass (Liebenberg 2013, 26). Many predators and scavengers such as jackals, hyenas, cheetahs and wild dogs can be intimidated into leaving their kills this way. The most likely source of scavenged meat would have been lion kills, because they do not consume the whole animal, leaving behind bone marrow, brains and even sometimes flesh. (Liebenberg 2013, 27).

Modern Kalahari hunters still follow the flying vultures to drive off predators. If they find a pride of lions on the carcass, they study the lion activity to determine how hungry the lions are. If they seem to be full, but not yet lying down they might be willing to leave the kill site. The hunters choose the right psychological moment and rush up to the kill site while shouting and waving their arms to scare off the lions. Some hunter-gatherers have also been recorded as having set bush fires to scare off lions. Liebenberg also notes that 85 percent of the carcass meat obtained by Tanzanian Hadza hunter-gatherers was acquired by scaring off the original predator or killing it too. (Liebenberg 2013, 28).

ALTHOUGH ENDURANCE RUNNING adaptations increased early human success in scavenging, in the face of limited ethnographic and archaeological evidence, Lieberman and Bramble were hesitant to suggest that endurance running adaptations played any serious role in predation, as David Carrier (1984) had already previously suggested. The studies of contemporary hunter-gatherer cultures provided no solid empirical evidence to support a prominent role of endurance running in hunting. Contemporary hunter-gatherers were either only opportunistic scavengers or hunted using more recent inventions like bows and arrows, nets and atlatls (spear-throwers).

However, Bramble and Lieberman (2004) agreed that the hypothesis offered by Carrier (1984) that obtaining meat through systematic scavenging or possibly even through persistence hunting (running down animals) might have been the reason for endurance running adaptations in early *Homo*. This idea was tempting because it could explain the co-evolution of endurance adaptations, larger body size, smaller guts and bigger brains and smaller teeth (Bramble & Lieberman 2004, 351).

CARRIER, BRAMBLE AND Lieberman were all convinced that endurance running had been important for human evolution. Their educated guess was that the reason for these adaptations was endurance predation, the ability to run down a big game by

tracking and following it under the hot mid-day sun until the animal would simply fall down and die of exhaustion and hyperthermia. The big animals simply did not have the ability to cool down their core temperatures as humans did. Their quadruped body was more exposed to solar radiation than our slender upright bodies. Our hairless body had only the necessary amount of hair on the top of our heads to block down the sun blazing from above. The animal would have to rely on sprinting away to cool down in the shade panting and hoping the human predator would ultimately lose track and give up the chase. Alternatively, the animal would try to get back to the herd and hope that the hunter would get confused with the tracks and go back home.

◆ ETHNOGRAPHIC EVIDENCE

The evidence of recorded ethnographic accounts of endurance predation was obvious, but the problem was that there were not any specific first-hand scientific records of it. Endurance predation is currently more commonly known as ‘*persistence hunting*’. This idea was already introduced in 1968 by physical anthropologist Grover Krantz (1968), who noticed that our early ancestors must have obtained meat some previously unexplained way. The lithic tools they used were not meant for big game hunting, they were mainly used for butchering. The absence of lethal projectile weaponry and several physiological adaptations was already visible in *Australopithecus*, but clearly evident in *H. erectus* made him suggest a big-game hunting method he called persistence hunting. Krantz refers to the Native Rarámuri (Tarahumara) of the Northern Mexico:

“Hunting deer consists of chasing the deer for two days—never less than one day. The Tarahumara keeps the deer constantly on the move. Only occasionally does he get a glimpse of his quarry, but follows it unerringly through his own uncanny ability to read the tracks. The Indian chases the deer until the creature falls from exhaustion, often with its hoofs completely worn away.” (Bennett & Zingg 1935, 113).

Krantz had also noted that Austrian-born American anthropologist Robert H. Lowie (1924) wrote about the hunting methods of the Northern Paiute, the North American natives of the Great Basin. Some of their hunts had similarities to persistence hunting

“The Paviotso had a communal antelope hunt with a pound into which the game was driven ... and also communal duck, mud-hen, and rabbit hunts. Individual hunters stalked deer and antelope; they approached the game wearing a deer or antelope head with the antlers and mimicking the actions of their victims. This practice is called *tü’hü-itaqwá*. In this way it was possible to sneak up close to the herd, and shoot animal, which was then pursued till it fell down. A strong man might also run down an antelope by tracking it for one or two days before shooting at all.” (Lowie 1924, 197)

Krantz also notes that there are also accounts on the Kalahari San from early 1900s that they had practiced something similar to persistence hunting. Krantz notes that relative hairlessness and wealth of sweat glands on *H. erectus* might have been advantageous adaptations for aspiring persistence hunters. He also suggests that persistence hunting provided more nutrition for early *Homo*, enabling a bigger brain, which in turn would have provided enhanced cognitive skills for tracking (Krantz, 1968, 450).

Most of the knowledge on persistence hunting in the Americas, Australia and Africa was based on fourth or fifth-hand ethnographic recollections. David Carrier was so obsessed by the theory that he ultimately decided to run down an antelope with his brother Scott Carrier in Wyoming in 1984. They did not have the sufficient tracking skills and antelopes were too cunning for them. Scott Carrier carried on the ethnographical research and ultimately found a group of Native American Seri people who had the knowledge on persistence hunting, but were too old to demonstrate their practices. (McDougall 2009, 230–232).

◆ CONTEMPORARY EVIDENCE

After Bramble and Lieberman published their article in Nature magazine (2004) South African anthropologist Louis Liebenberg contacted them (McDougall 2009, 232–233; L. Liebenberg, personal communication, September 2, 2015). Liebenberg had already written a book “*The Art of Tracking*” (1990) of his own first-hand experiences of the traditional hunting skills of the Kalahari San. However, the book did not cover the actual physical side of persistence hunting. It is mainly concerned with the cognitive demands of tracking.

After Louis Liebenberg contacted Dennis Bramble and Daniel Lieberman he was assisted by Daniel Lieberman and published an article (Liebenberg 2006) on the subject. Liebenberg’s article provided the necessary evidence to support the persistence hunting hypothesis. According to Liebenberg:

“Data from observations of !Xo and /Gwi hunters of the central Kalahari in Botswana presented here suggest that persistence hunting was a very efficient method under certain conditions. Compared with other forms of hunting, it may have been one of the most efficient.” (Liebenberg 2006, 1017).

The first time Liebenberg was able to record a persistence hunt was in Lone Tree in the central Kalahari in Botswana in 1985 when !Xo hunters !Nam!kabe, !Nate, Kayate, and Boro//xao reported it to him. The first time he witnessed the hunt on foot was in 1990, when he nearly died in dehydration and hyperthermia during a kudu chase. In 1998² and in 2001 he organized a persistence hunt for international film crews. A total of eight attempts resulted in three kudus killed. The hunt filmed by the BBC in 2001 depicts Karoha, !Nate and /Uase from Lone Tree running down a large bull kudu. This recording is a part of the last episode titled “*Food for Thought*” of David Attenborough’s “*Life of Mammals*” (2003). (Liebenberg 2006, 1017).

2 In November 1998 Liebenberg worked with Craig and Damon Foster filming the movie ‘The Great Dance’ (2000), but did not want his name mentioned in the film’s credits.

According to Louis Liebenberg, the persistence hunt optimally took place during the hottest time of the day when the maximum temperature was around 39 to 42 degrees Celsius. The hunts were performed by three to four hunters, of which some were too old to run down an animal by themselves, but were skillful trackers. The shortest run Liebenberg witnessed took less than two hours. Two successful hunts in 2001 by Karoha were recorded with global positioning system (GPS). The first one took 3 hours 50 minutes covering 25.1 kilometers, with an average speed of 6.3 kilometers per hour. The second one took 4 hours and 57 minutes covering 33 kilometers with an average speed of 6.6 km/h. (Liebenberg 2006, 1017–1018).

The speed of the runner might seem slow compared to elite marathoners, who run 42 kilometers in just over 2 hours. The current record is a time of 2 hours, 2 minutes and 57 seconds by Kenyan runner Dennis Kimetto, set in Berlin on September 28, 2014. However, !Xo hunter Karoha ran in extreme heat on soft sand through thick bush and continuously followed the animal spoor trying to keep on the right tracks. Losing the track was the main reason for failed attempts recorded by Liebenberg (Liebenberg 2006, 1018).

The data that showed that humans could run down a large game-animal was important evidence to support Carrier's (1984) initial ideas. Early *Homo* did not need complex projectile weapons for hunting. All they needed to do was to exhaust an animal and get close enough to dispatch it safely (Liebenberg 2006, 1019).

◆ CONDITIONS FOR PERSISTENCE HUNTING

According to Louis Liebenberg (2013), persistence hunting must have been the most practiced way of hunting for all humans prior to the invention of projectile weapons, but since the 1990s, the only persistence hunters lived in the central and northern Kalahari, in the areas of Lone Tree, Bere and ≠Xade in Botswana, and Nyae Nyae and Caprivi in Namibia.

The persistence hunt will require a healthy population of the preferred animals, the hottest weather possible. Prior to the chase the hunters drink as much fluids as possible. Then they run after the animal. Naturally the animal will flee at a gallop to cool down in the nearest shade. The hunters follow, running to chase the animal away from the shade before it has properly cooled down its core temperature. The hunters can track the animal much faster in a group. The slower runners will follow tracks and the fastest runner tries to keep up the pace to keep the animal moving and ultimately causing heatstroke. If the runner loses the spoor, he will be caught by the slower hunters who might not have lost the track and the runner can continue the chase. This process is continued until the animal gets overheated and stops, or collapses and the hunter is able to dispatch it safely from close range. (Liebenberg 2013, 39–41).

The hunters can only cool down by sweating but this leads to dehydration and ultimately hyperthermia. This can be avoided by resting in the shade or drinking enough water. The Kalahari hunters seem to drink extremely little. In 2009 Liebenberg interviewed older Ju/'hoan hunters born around the 1930s and 1940s in the Nyae Nyae in Namibia asking how much water they carried for persistence hunts.



Fig. 21. G/aqo holding the springhare probe as Kxao and Bo dig it up from its hole Nyae Nyae Conservancy, Namibia. December 2014.

Before they had plastic containers, they used ostrich shells, which can hold about 1.25 liters of water. Only one eggshell can be carried in a hunting bag at a time, otherwise the eggs would break. The Ju/'hoansi reported that they never drank any water during the day when they were running after an eland. The hunter would leave his camp in Tsumkwe at noon to follow an eland spoor for 30 kilometers in three to six hours. When the hunter had the animal “*under his control*” he (the Ju/'hoan hunters were all male) would turn the animal to run towards the village, so the hunter would not have to carry all the meat back home. Only when the animal was dispatched would the hunter drink, and the older hunters would follow him to bring more replenishments. (Liebenberg 2013, 40).

Although some animals are better suited targets for persistence hunting, and seasonal changes also affect the hunt, the persistence hunt would have been a very effective method for catching several animals in various seasons. A kudu bull is more easily run down than a kudu cow, because the kudu bull has heavy horns and it is more easily exhausted. But a kudu cow can also be hunted when it is pregnant or wounded. Injured or ill animals are naturally more easily run down than physically fit animals. During a full moon animals stay active throughout the night and they remain tired during these days. In August and September the animals are bitten by the insects making them sick and more prone to exhaustion, but the best season to run down an animal is at the end of the hot and dry season in October and November. After the first rains in November and December the kudu will suffer diarrhea

and thus be more prone to exhaustion. Although some seasons are a bit easier for persistence hunters, it seems that it have been possible for humans to hunt this way all year round. Liebenberg has also recorded one persistence hunt during a cooler period in July. (Liebenberg 2013, 44).

ACCORDING TO PATRICIA Vinnicombe (1976), David Lewis-Williams and Megan Biesele (1978), eland, which used to be the preferred game animal of the Southern African hunter-gatherers, was probably much easier to run down than the other antelope that were hunted by the last persistence hunters recorded by Louis Liebenberg. The eland was probably much easier to run down, due to its docile nature, but also due to its stubborn habit of always running upwind and its huge fat reserves that made it easier to exhaust. According to Lewis-Williams and Biesele (1978) in 1975 there was only one older Ju/'hoan hunter in Dobe in Botswana who had actually killed an eland. This was due to the general scarcity of the antelope and to game restrictions the San had to obey.

◆ EFFICIENCY

According to Liebenberg (2006), persistence hunting is not just possible, it is also a very efficient method with a good success rate and meat yield. The data presented by Liebenberg suggests that persistence hunting produces a higher meat yield than using more sophisticated and complex technology such as a bow and arrow, clubs and spears, or springhare probes, and about the same amount as snaring. According to Liebenberg, only hunting with dogs produces a significantly higher meat yield. (Liebenberg 2006, 1022).

The springhare probe sounds like a relatively simple hunting method, but I was able to follow a group of Ju/'hoan hunters for four days in the Nyae Nyae in early December, and they only caught one springhare.

According to Louis Liebenberg, persistence hunters were very successful even in the late 1990s when the skill was almost gone. There is no reason to doubt that the more skillful hunters of the past would not have been even more successful. When the conditions are ideal the hunter was more likely to dispatch the animal by heat exhaustion than shooting it with a bow and poisoned arrow. According to Liebenberg, about 80 per cent of the persistence hunting attempts he recorded were successful. Hunters were even more successful incorporating more modern methods, such as hunting with dogs, which is essentially a type of persistence hunting. The only difference is that the dogs are doing the majority of tracking and pursuit (Liebenberg 2013, 50).

Persistence hunting is most effective in ideal conditions and most effective when hunting particular species which are easier to exhaust, like eland. However, hunting with a bow and poisoned arrows is a very flexible and effective method in various conditions and on various species from the small antelope even up to giraffes. Elands and other suitable animals for persistence hunting have also become very rare in the Kalahari.

◆ BOW AND ARROW

Hunting with a bow and arrow is a very sophisticated skill and rather recent development in hunting, which appeared about 70,000 to 64,000 years ago (Lombard & Phillipson 2010; Brown, et al. 2012; Brooks, et al. 1995), but it is more prone to chance. Even if the hunter were able to track down and stalk near enough to wound the animal, it would flee and sometimes it can take days to track it down. This process demands good abilities for endurance just like persistence hunting. During this tracking period the animal might be killed by nocturnal predators or scavengers. Faster hunter will be much successful. Because of the unpredictable nature of hunting, the San take what they can. They might try to track down an antelope to shoot, but dig up an aardvark if the opportunity presents itself (Liebenberg 2013, 51).

The arrows used by the San are extremely light and small, and the kinetic energy produced by the small bow is ineffective for most hunted animals without the poison. The poison mainly used by the Ju/'hoansi, /Gwi and !Xo comes from the larvae of beetles of the *Chrysomelidae* family and their parasites (Liebenberg 1990, 58; Chaboo, Biesele, Hitchcock & Weeks 2016). The hunters dig up the cocoons, which live under *Commiphora* trees (the larvae of the *Polyclada* beetle is dug up under the Marula tree) some 50 to 100 centimeters deep. The larvae are treated with utmost care. The poison is deadly if it enters the bloodstream, and it can even be effective if it enters through a smallest scratch in your fingertips. It can also blind a person if it gets into your eyes. However, the poison is not effective when consumed orally. The poison is applied to the shaft right under the point. This is necessary to prevent accidents with the sharp arrow points. The shaft of the arrow must enter the target to produce a fatal wound. The poison does not kill immediately. It usually takes 6 to 24 hours or even more to kill an animal and some animals are more resistant to the poison. The poison is more effective if the animal is shot in the heart. In some cases it can take up to three days before the animal dies, but Liebenberg has witnessed a wildebeest dropping down immediately after been shot with poisoned arrows from about 25 meters. (Liebenberg 1990, 58).

Hunting with poisoned arrows requires that the animal is tracked and stalked. The hunter does not have to be invisible trying to get to shooting range at about 25 meters. The prey animals will only recognize hunters by their scent and movement, but their physical shape, size and color might go unnoticed. The hunter will try to get as close as possible. After the shot the animal is often only wounded and it will escape. After the shot, the hunters might need to track down the animal. The hunters study the tracks of the wounded animal very closely. The wounded animal might have a distinctive way of moving uncommon to other animals. Blood spoor might also be helpful. The hunters will also gather the shooter's arrows and count them, this will be helpful in determining if the animal was hit at all. The arrows are made of detachable parts and the remains of the arrow can be tracked. In some cases the arrow is removed by the muscular contractions but there still might be enough poison inside the animal to cause a fatal wound. The trackers try to predict how long will it take to track down their prey. Blood spoor might indicate whether it will die or survive. Agitated stamping signs might indicate the animal is already lethally poisoned. (Liebenberg 1990, 63).

The tracking down of the wounded animal might turn out to be a long three-day process and hunters must be careful not to lose the tracks, not to exhaust themselves, and not to lose their quarry to other predators or scavengers. If it is late in the afternoon the hunters will either camp on the trail or go back to the village and return to tracking in the morning. While the hunters track down the wounded animal, they avoid drinking and eating, since they believe their own refreshment would also replenish the wounded animal. According to Liebenberg the trackers are also afraid that they would become sluggish if they would eat during the process giving the animal a better chance to escape. The hunters try to speed up when they notice their quarry is finally dying. Eventually they spear or club the animal to death. If the animal is already dead and it is been consumed by vultures the hunters will scare the vultures away and take back the carcass. If the carcass is been devoured by lions the hunters must carefully determine how hungry the lions are and whether they could they be driven off. (Liebenberg 1990, 64).

RUNNING HAS UNDOUBTEDLY formed our physical structure the way it is. Our body was adapted to run long distances in hot environments. This ability has been crucial for our existence. It must have been a deadly ability in the African savannah. The fact that humans still participate in long-distance races for recreational purposes also suggests that some people actually like running. According to “*Running USA 2014 Marathon Report*”³ there was a record number of Marathon finishers in the year 2014. A total of 550,637 people finished one of the over 1,200 official Marathon races organized in the US. Endurance running is not just something we used to do for hunting for millions of years. It is something that is so embedded in human psychological structure that we enthusiastically enjoy this activity. According to Louis Liebenberg:

“Running is rooted in our collective imagination, and our imagination is rooted in running. Language, art, science, space shuttles, Starry Night, intravascular surgery; they all had their roots in our ability to run. Running was the superpower that made us human—which means it’s a superpower all humans possess.” (cited in McDougall 2009, 239)

◆ PERSISTENCE HUNTING AND BIGGER BRAINS

Daniel Lieberman and Dennis Bramble (2007) proposed that persistence hunting, as documented by Liebenberg (2006), was probably one of the major causes for endurance running adaptations. Lieberman and his colleagues (Lieberman, Bramble, Raichlen & Shea 2009) provide a more detailed account of how persistence hunting was important to human evolution. According to their study, the most likely method of hunting for early *Homo* was indeed persistence hunting, given the absence of more recent hunting methods like dogs, nets, and other complex technologies. The preferred conditions for persistence hunting would have been open arid areas with good visibility and where the temperature is adequately hot, between 39 and 42 degrees Celsius. The chosen prey is forced to gallop by pursuing it at a steady running

3 <http://www.runningusa.org/marathon-report-2015?returnTo=annual-reports>

pace. The animal is denied the opportunity to cool off by panting in the shade by always chasing it and making it gallop in the sun. Tracking was a crucial skill even to early persistence hunters. The brain of *H. erectus* was probably already large enough to enable cognitive abilities necessary for simple interpretations of animal tracks. (Lieberman, Bramble, Raichlen & Shea 2009, 85–86).

Persistence hunting and tracking might have spurred the evolution of bigger brains. Large brains appear only after the evolution of this more slender endurance runner's body appears. The importance of endurance running did not lose its significance before more complex projectile weapons like atlatls (spear-throwers) and bows and arrows were invented. The Kalahari hunter-gatherers still practiced persistence hunting until recently and they still run after some game-animals after shooting them with poisoned arrows. This is especially done after the first rains when the animal hoof sinks in to the wet and soft sand. If the hunter is fast enough, it will get to the animal faster than the other predators.

The physical and cognitive demands of tracking together with more stable access to high quality foods might have stimulated brain growth even further. Lieberman and his colleagues (Lieberman, Bramble, Raichlen & Shea 2009) notes that Lieberman's records (2006) of persistence hunts have a relatively high success rate yielding 70 per cent more meat than with bow and arrow. Persistence hunting also happens at very low metabolic costs. Endurance running speeds require only 30 to 40 per cent more energy than walking. This energy loss is independent of speed. The cost of moving at a speed of 3 meters per second is the same as moving at 6 meters per second. Dispatching a large game animal with a wooden spear or club after it is exhausted and suffered a lethal heatstroke is much safer with a low risk for the hunter being injured in the process. (Lieberman, Bramble, Raichlen & Shea 2009, 86).

RUNNING IS THE only sports activity humans can practice and enjoy throughout their lives. Christopher McDougall's (2009) interview of Dennis Bramble claims that marathon runners get faster every year after they are 19 years old and peak at age 27. After their peak, their speeds begin to decline, but they can still run very fast. Actually, they are only back at their 19 year old level when they are already 64 years old (McDougall 2009, 240). This means our distant ancestors could have pursued animals as a running hunting group with all of them tracking and the fastest members making the final pursuit, exhausting their prey.

THE PERSISTENCE HUNTING hypothesis tries to explain the physical evolution of our ancestors. It also forms a plausible image of how *H. erectus* could have obtained enough good quality foods to further evolve into our own species. However, my argument is that persistence hunting also produced some forms of altered states of consciousness, which could have affected the cultural evolution into shamanic practices. That is why we also need to examine how running affects our mind. But first we will have a look on the last persistence hunters of the Kalahari and the endurance running traditions of the Native Americans.

9. Persistence Hunters of the Kalahari

This chapter goes into detail about the anthropological evidence of persistence hunting among the Southern African hunter-gatherers. The chapter begins with describing the first hand experiences of persistence hunting by Louis Liebenberg and continues by acknowledging the dangers of using the recent hunter-gatherer behavior as parallels to the Paleolithic people, but persistence hunting is extremely widespread custom with a possible two million year tradition, so this might be one of the few aspects of modern human behavior we might actually consider Paleolithic. One of the accounts I found on the persistence hunting among the Southern African hunter-gatherers was described by Lewis-Williams and Megan Biesele (1978). For them it was nothing special but it is important for this thesis. I also acknowledge the other few anthropological notes including the few mentions by the Marshall family (Marshall 1999; Marshall Thomas 2006) which are related to persistence hunting by the Ju/'hoansi of the Nyae Nyae area in Namibia. The most intriguing example I happened to find was also the earliest first hand experience of a persistence hunt. It was described by a eighteenth century Finnish renegade explorer Henrik Jacob Wikar, who ran away from the Dutch East India Company (VOC) and ended up traveling further up north than any European before him. His description of a southern Namibian persistence hunt shows that the practice might have actually been much easier in the past, due to more suitable game animals and more practical experience.

Although it is dangerous to consider more recent hunter-gatherers as parallels or equivalents to European humans during the Pleistocene, there still remains tremendous knowledge in ethnography. Ethnographic evidence shows that most recent hunter-gatherers share certain features that had proven successful regardless of environment or its resources. Paleolithic European hunter-gatherers lived in similar-sized groups, most certainly had similar family structure, and they hunted with fairly similar methods.

We can also suppose that they tried to make sense of the environmental changes, and tried to predict these changes before they happened. They also had elaborate ceremonies for funerals and they produced images in caves, made portable art and also decorated their tools and weapons with images. Furthermore, since most of the recent hunter-gatherer societies had (or still have) a close connection with experiences of altered states of consciousness and communal rituals organized for achieving them, we could make an educated guess stating that the prehistoric Paleolithic humans that left Africa had shamanic traditions.

The human knowledge of our place in nature and inevitable nature of our own mortality usually involves some sort of religion. If we make the parallel with ethno-

graphic evidence like David Lewis-Williams, Thomas Dowson and Jean Clottes (e.g. Lewis-Williams & Dowson 1988; Lewis-Williams & Clottes 1998a) we are to believe they had shamanic ritual behavior. The recent hunter-gatherers living in the Kalahari share many of these cultural aspects and we can suppose some cultures before the Upper Paleolithic also shared many of their behavior models. But to consider this much further, requires a huge leap of faith. The 'neurological bridge' offered by Lewis-Williams and Dowson (1988) is very convincing for some imagery, but to use that model to decipher all art of the Upper Paleolithic demands a leap of faith. In my opinion, some other explanations could provide additional information for their theory. I believe this knowledge was still available among the Kalahari hunters quite recently, especially among the recent persistence hunters.

◆ ACHIEVING ALTERED STATES

Shamanism is based on a belief in supernatural forces, deities, and realms which are all connected to the experiences in altered states of consciousness. The means to achieve these experiences vary from one shamanic culture to another. Some cultures use strong hallucinogens to achieve a trance state. The Kalahari San and the nineteenth century South African San achieved similar trance state using loud music and intense dancing that could last the whole night long.

The communal distribution of the right to enter these states also varies considerably. On the one end of the spectrum there are official shamans that hold a monopoly to these experiences and distributes *medicine* and brings back information considering this like animal activity, weather, and shortcomings of ancestors etc. At the other end of the spectrum there are the Kalahari San. Their access to the spirit world is a collective event and everyone has access to these experiences and the collective participation keeps the small group tightly knit.

THE ANCIENT HUNTER-GATHERER societies, that dispersed around the world from Africa about 60,000 years ago, probably already had shamanic traditions. Most human hunting and gathering societies around the world relied on shamanism to explain the unknown and natural phenomena. Even our modern religions have close connections to these traditions and ceremonial practices. If most ancient hunter-gatherers already had shamanic traditions, it would be appropriate to ask: how did these beliefs and customs originate? How did modern humans begin to have knowledge of altered states of consciousness? What was the origin of it? Did someone accidentally consume psychotropic plants and everyone else agreed to follow? I strongly doubt that it originated from such an accident.

The ritual healing practices of the Kalahari San might be much older that we can suppose. Their traditions must have evolved radically during the last 2,000 years, when they began to assimilate with the settling Khoikhoi and Bantu tribes. But one thing is certain, the San people do not use psychotropic plants to achieve trance. According to Lorna Marshall (1999, 317) even marijuana (*Cannabis sativa*) was extremely rare among the Ju/'hoansi of the Nyae Nyae in the 1950s. It did not grow

on the area, but it was possibly to trade for it with the Herero and Tswana people. It had possibly originated from northern Botswana, since the Ju/'hoan word 'dagga' was adopted from the Khoikhoi. Dagga appears already among the Khoikhoi in the earliest explorer records from southern Namibia in late 1770's (Wikar 1935, 63). When Richard Katz (1982) was conducting his field research among the Ju/'hoansi in 1968, the people were much more familiar with marijuana. But according to his interviews, the Ju/'hoansi did not use marijuana to achieve trance (!kia) if they did not already have any prior experience achieving it (Katz 1982, 180).

Altered states of consciousness can be achieved in many ways. The most powerful means include:

1. Hallucinogenics from certain plants and fungi (obviously the easiest and fastest route)
2. Sensory deprivation (limitation of external stimuli, soundless and dark room)
3. Audio driving (rapid increase in sounds, intense rhythmic music)
4. Visual driving (rapid increase in visual stimulation, flashing bright lights)
5. Endured physical activity (dancing and running)
6. Endured physical pain
7. Prolonged fasting
8. Sleep deprivation
9. Pathological states (schizophrenia and temporal epilepsy)

Dreaming is not included in this list, since it follows a completely different trajectory in human consciousness. Vivid hallucinations can be as powerful and even more powerful than real life events. Dreams are easily forgotten and they are easy to distinguish as dreams. (Lewis-Williams 2002a, 124-125; Siegel 1992, 7).

◆ CONNECTION BETWEEN HUNTING AND HEALING CEREMONY

Intentionally achieved trance is at the very center of shamanic rituals. In my view, this trance state must have originated from something that people had been intentionally performing for a considerably long time and which had produced unintentional altered states of consciousness. I believe that it was connected to persistence hunting, tracking and running down an animal. Certainly, people do not fall into unintentional trance while hunting using more recent inventions, like atlatl (spear thrower) or bow and arrow. Hunting with projectiles were probably invented not longer than 64,000 or 70,000 years ago (Lombard & Phillipson 2010; Brown, et al. 2012; Brooks, et al. 1995) suggesting that people were already practicing shamanism when they began using lethal projectiles.

My claim is that the origins for intentionally induced altered states experiences are rooted in a much earlier development, which is still connected to persistence hunting. This is still evident in the activities of the Kalahari San. One of the remarks for this idea came from a discussion I had with a Ju/'hoansi interpreter, hunter, tracker and aspiring healer Kxao from //Xa/oba in Nyae Nyae Conservancy.

DURING OUR STAY with the Ju/'hoansi in November and December 2014 my wife Maija and I were tracking a kudu together two Ju/'hoan hunters, the healer man G/aqo and the young tracker and our young interpreter Kxao. I asked casually whether there was any connections between the healing ceremony and hunting? I wanted to know if there was a connection between the dances and tracking an animal. Kxao told me that: *“When I see an animal spoor, I become the animal. When I dance, I become the animal. When I dance a giraffe song, I am the giraffe.”* (Kxao, personal communication, December 5, 2014).

During this discussion with Kxao it appeared to me that this transformation was not based on mental transference nor was it a metaphor. Instead, it was a full body experience and a terribly realistic one too. Kxao was already in his late twenties and he had never experienced a deep trance in a healing ceremony, but he was constantly trying to achieve it and he was hoping to one day be able to do it. Although he had never been in a trance, these transformation experiences in tracking and dances were absolutely real to him. According to Kxao, tracking was most definitely connected to the healing dances.



Fig. 22. Kxao and G/aqo with a wildebeest remains. Nyae Nyae Conservancy, Namibia. December 2015.

◆ THE KUDU CHASE

In the previous chapter we already discussed the physiological adaptations which enabled persistence hunting and how it might have been a successful hunting technique with a good success rate when the conditions were optimal. However, the physiological ability for persistence hunting alone does not explain the origins of shamanic practices nor origins for the first subjects depicted in visual culture. These aspects of human culture are much more tied to the psychological side of endurance running and prolonged tracking. The mental transformation of the Kalahari trackers like the one described by Kxao can easily be understood as a superficial metaphor, and without the transformation experience reported by Louis Liebenberg (2013) I probably would have not taken it too seriously. As Liebenberg describes, the transformative experience is closely tied to the intense attention of the tracker combined with the exhaustive nature of the persistence hunt. The hunter will try to run down an animal, but it is also extremely (physically and mentally) demanding on the hunter.

The first time a Western anthropologist recorded a persistence hunt (running after an animal until it stops and can be dispatched with a short range throwing spear or other similar method) was in 1985 in Lone Tree in Central Kalahari in Botswana by Louis Liebenberg. The hunters !Nam!kabe, !Nate, Kayate, and Boro//xao reported it to him, but he did not attend one on foot until the “*Kudu Chase*” with the same group in 1990. This chase resulted in a great kudu bull suffering a fatal heatstroke. The hunters were tracking the kudu when they decided to run it down. !Nam!kabe decided to take all the unnecessary equipment back to camp and Liebenberg decided to join the hunters. (Liebenberg 2013, 18; 39).

Persistence hunter always has to measure his own condition against the condition of the hunted animal. Balancing their own condition against the condition of the animal is crucial. As the hunters tracked, walked and ran they tried to visualize the condition of the animal. Eventually the kudu began to show signs of lethal hyperthermia. It was kicking up sand and its stride was getting shorter. But Liebenberg himself was also getting seriously dehydrated. He was so intensely focused trying to project his mind into the mind of the kudu, trying to imagine his intentions, and to run down the kudu to its death, he almost ran himself down. Liebenberg writes:

“Concentrating on the spoor I was so caught up in the event that I was completely unaware of my own state of exhaustion. As if in an almost trance-like state I could not only see how the kudu was leaping from one set of tracks to the next, but in my body I could actually feel how the kudu was moving. In a sense it felt as if I myself actually became the kudu, as if I myself was leaping from one set of tracks to the next. ... the kudu seemed to be so exhausted that I insisted that we should carry on. At one point a cold shiver went through my whole body and for the first time I realised that I was dragging my feet in the sand. Some times my legs buckled under me and I would stumble over branches, but through intense concentration on the spoor it was as if though my mind was simply dragging my body along.” (Liebenberg 2013, 19).

◆ THINKING LIKE THE ANIMAL

When a hunter is tracking an animal, the tracker tries to think like the animal to predict its movement. The hunter tries to project his mind into the animal's mind, trying to feel and act like the animal. Sometimes the process is so intense that the hunter feels as if he himself becomes the animal. This was also reported by Liebenberg in the 1990 Kudu Chase, as he examined the tracks of the slowly exhausting kudu and felt as if the track was his own and the hunter (himself) was pursuing himself. He had merged so deeply with the mind of the animal, that he ultimately felt like he had actually become the animal. During tracking the hunter asks himself what is the animal feeling. Is the animal feeling strong, healthy, tired or injured? This information can be read directly from the spoor. (Liebenberg 2013, 37). Karoha, one of Liebenberg's hunting partners, explained:

“When the kudu becomes tired you become strong. You take its energy.” When the hunt is finally over and the animal stops it either collapses or it just stands there looking at the hunter with glazed eyes. Karoha explains: “What you will see is that you are now controlling its mind. You are getting its mind. The eyes are no longer wild. You have taken the kudu into your own mind.” (Liebenberg 2013, 37–38).

Liebenberg explains that occasionally the hunter enters a trance-like state. The anticipation, intense mental focusing into the mind of the animal, physical exhaustion and nutritional depletion all drive the hunter forward and plunge the mind of the hunter into an altered state of consciousness. The hunter has to continuously calculate his own condition and resources and refer that to the condition of the animal. Sometimes the hunter has to let go, but occasionally he depletes his own resources and suffers the consequences. (Liebenberg 2013, 37–38).

However, exhaustion is not a common reason to give up the chase. The main reason for giving up is when the track is lost. This is the most common reason for unsuccessful tracking attempts. The most difficult situations for the tracker are the cases when the tracked animal rejoins the herd and its spoor is mixed with the other similar tracks. Sometimes the hunter will be able to recognize the individual tracks and chase the animal from the herd, but this is extremely rare. (Liebenberg 2013, 43).

◆ ELAND DANCE

According to David Lewis-Williams and Megan Biesele (1978) the San hunters in South African rock art are often depicted running and pursuing game. The animals are also occasionally depicted as having white foam coming from their mouths. The practice of persistence hunting was still practiced after the arrival of the white settlers, but it was often done on horseback. According to Patricia Vinnicombe (1976), during more recent times, the San adopted riding the horses of the white settlers and ran down eland this way. One of the reasons why eland was relatively easy to run down was due to its docile nature but also its massive fat reserves, extremely coveted by the San, which made the eland a much slower runner than many other animals (Marshal Thomas 2006, 30–33; Lewis-Williams & Biesele 1978, 117–119; Vinnicombe 1976, 163).

One of the main ceremonies in Ju/'hoansi culture is the menarchial rite. This rite is performed for a girl's first menstruation. The Ju/'hoansi women sing the Eland Song, which is a *n/om* (supernatural power) song composed particularly for this occasion. It is also believed to be one of the oldest songs performed by the Kalahari San. The five-tone scale used in this song is very different from other music performed by the Ju/'hoansi and it is also performed by other San language groups in the Kalahari. Women perform the music and the dance in this ceremony and the women are naked except for front aprons with strings of ostrich shell beads draped over their buttocks to represent elands' tails, the part of the animal persistence hunter would have tried to catch. One female dancer imitates the sound of the eland's footfalls by clinking two metal ankle ornaments together. This sound is very typical for a running bull eland. The sound is possibly caused by the eland's tendons snapping over the carpal joint. (Marshall Thomas 2006, 36–37; Marshall 1999, 197–199).

Eland was the most preferred game of the Ju/'hoansi. They categorized their animal foods into three categories. The first category was the 'slow game', which comprised of easiest sources of meat e.g. tortoises, snakes, snails, lizards, and baby birds. The second category was the meat stolen from the other predators. The third category was the hunted meat, which mostly included the six big-game animals also highest in *n/ow*, which is a supernatural force which exists in humans and certain large animals like in giraffe, eland, kudu, wildebeest, gemsbok, and hartebeest. The hunters mainly hunted for these six animals but were opportunistic in taking every chance they had to take down a duiker, warthog, steenbok or an ostrich. The six big-game animals provided the Ju/'hoansi with meat, hides, sinews, and other materials. The Ju/'hoansi believed that *n/ow* also has the unintentional ability to control weather. Good *n/ow* (but not the person or animal who possesses it) has the ability to make rain. (Marshall Thomas 2006, 91–93; Marshall 1999, 168–169).

◆ THE LAST PERSISTENCE HUNTERS

Because the eland was easier to run down than the other antelopes, the practice of persistence hunting was probably lost after the numbers of the eland plummeted in the mid-twentieth century and the San were forced to obey game restrictions. Louis Liebenberg (1990; 2006; 2013) was the first anthropologist that really became interested in the tracking skills of the Kalahari San and ultimately became the first one to witness an actual persistence hunt. This took place in 1985 in Lone Tree, Botswana, when the local hunters reported it to Liebenberg. But in 1990 he was able to attend a kudu chase on foot in 1990. (Liebenberg 2013, 39).

Liebenberg was able to collect the data of the last persistence hunts and show that it was still possible even in much more difficult conditions than those that prevailed in Southern Africa and elsewhere when humans were all hunter-gatherers. Persistence hunting is one of the most effective ways of hunting which does not require any complex tools. Persistence hunting was still possible in the Kalahari as recently as in 2001 (Liebenberg 2006) and it still yielded considerable amounts of

meat. We can only imagine how effective this method must have been prior to colonial expansion to the northern part of South Africa.

Unfortunately we do not have good accounts of the original hunting methods practiced by the Southern African hunter-gatherers prior to the arrival of European settlers, who appear to have been much more interested in the tools and weapons of the San than in their actual hunting skills and practices. They were probably just too unfit to participate in hunts on foot. When the European settlers began to study the southern African hunter-gatherers, they had already been living with and intermarrying with the Khoikhoi and Bantu settlers for more than a millennium. Their original hunting practices were more or less assimilated with the new ones. One of the most prominent notes on persistence hunting before Liebenberg came from the books by the Marshall family.

The writings and films of the Marshall family comprise a collection of important documentation of the lives of the Ju/'hoansi culture during the last era their lives when they still remained mostly unaffected by the outside world. According to Elizabeth Marshall Thomas (2006, 32–33; 92–94), persistence hunting was still practiced by the Ju/'hoan hunters in the early 1950s. John Marshall, who was still a young man at the time, tried to participate in one attempt, but failed to keep up with the pace. A hunter known as Short /Kwi was small, slim and unassuming and probably still under twenty years old when they met him in 1950. Short /Kwi and several other young men in the Nyae Nyae, were known to run down elands at Nama Pan, located c. 45 kilometers south from present-day Tsumkwe. The best conditions for this was during the hot summer months after the rains when the mud would get inside the eland's hooves and split them apart making galloping even more difficult. The splaying hooves are depicted in Chapter 13 (Figs. 29 & 30).

Marshall Thomas (2006) describes a persistence hunt in her book on the Ju/'hoansi. When an a bull eland is threatened, it will sprint off at 35 miles (56 kilometers) per hour and continues for a while and then it stops and turns to observe and identify the threat and to determine if the threat is gone. This will usually be enough to discourage a lion, which would already be too exhausted to continue. But a running human would then run into view still continuing at a comfortable aerobic endurance speed. The eland would charge off again. This time sprinting would pose a life-threatening risk for the creature. Its massive reddish brown hair absorbs a lot of heat from the sun and its body temperature would increase drastically. When it stops again, it would see the hunter still running in pursuit. The only option left for the eland would be just to push on and hope the hunter would give up. Every time the eland looks back it would see the hunter running. The hunter would always be closer, and the short periods of rest would get even shorter each time. Eventually the eland cannot run any longer, and it falls to its knees or just stops and stands still, head low and legs wide apart. Then the hunter would grab its tail and spear the animal to death. If the hunter did not have any weapons, he could push the eland over and lie on its neck and clamp his palms over the eland's nose and mouth, suffocating it. (Marshall Thomas 2006, 32).

Marshall family were not the only ones to acknowledge persistence hunting. During 1958 to 1966 South African George B. Silberbauer (1981) conducted a massive “*Bushman survey*” in Botswana working as a District Commissioner under the British Colonial Service. He was based in Ghanzi, but his main area was the central Kalahari desert and especially the G/wi people who lived there as hunter gatherers. According to Silberbauer (1981, 215–216) the G/wi hunters had remarkable powers of endurance and they occasionally ran down large antelope, such as eland, kudu and hartebeest.

◆ EARLIEST EVIDENCE OF PERSISTENCE HUNTING

However, I happened to come across one exceptionally early account of persistence hunting. It was written by a very unusual character. The Finnish explorer Henrik Wikar was born in 1752 in Kokkola, Finland, which was actually part of Sweden until 1809 when it became part of the Russian Empire. Wikar left Finland to work for the Dutch East India Company (Vereenigde Oostindische Compagnie, VOC) in Cape Town, South Africa in 1773 as a clerical officer at a local hospital. But quite soon after, in April 1775 he got in trouble due to his gambling debts. Wikar decided to escape. The Dutch colony was spread far up north already with scattered farms everywhere. Trying to avoid European contact was probably a very difficult task for a Finnish outlaw in the 18th century South Africa.

Wikar ended up spending four years exploring South Africa and he travelled further up north than any other European explorer before him. His journal (Wikar 1935) describes his exploits among the local Khoikhoi and Herero, but also among the last remaining hunter-gatherers living along the Orange River in present-day northern South Africa and southern Namibia. His journals from 1778 to 1779 also have the earliest firsthand reports of persistence hunting I have managed to find. Wikar (1935) writes:

“In the months of December, January, February and March the climate here is exceptionally hot so that you cannot leave a skin or leather thong [sandal] lying outside for an hour without its being shriveled up, with the result that you can pull it to pieces. The sun is so fierce here that you cannot walk barefoot in the dust or the sand for 20 yards without getting your feet blistered. On the plains of the Great River at this time of the year you can catch even a steenbuck with your hand (of course, that is when it has not rained), for when it jumps up you just let it go its way. You now remain sitting in the shade under a bush for as long as it takes to smoke a pipe, then you take the spoor of the steenbuck and follow it; after you have driven it up again you sit down once more for 7 or 8 minutes as before. The third or fourth time you do this you can catch it with the hand as it jumps up—then its feet are burnt through. This is the regular custom of the Bushmen of the plain in the hot season.” (Wikar 1935, 175).

Because Wikar's journals are accompanied with maps, they revealed some important and treasured details on the indigenous people living in those remote areas, and he was later pardoned from prosecution. He was pardoned in 1779 and he stayed at the service of the Dutch East India Company.

THE JU/'HOANSI STILL occasionally practiced persistence hunting in the early 1950s in Namibia, but mostly hunted with bows and poisoned arrows (Marshall Thomas 2006, 29). Marshall Thomas (2006) also notes that David Lewis-Williams had once told her about a rock painting in the Drakensberg that depicts hunters running down a bull eland. There is also a painting (Fig. 84) of a running eland depicted from behind (Lewis-Williams 2003b, 42) and one painting (Fig. 85) of an eland looking back over its shoulder (Lewis-Williams 2003b, 56). According to Marshall Thomas, some paintings also show hunters holding eland by the tail with the eland showing no resistance and appearing to droop in a position expressing fatal exhaustion (Marshall Thomas 2006, 36). This painting that Marshall Thomas refers to, is in fact the Game Pass Shelter panel (Figs. 17 & 67), also known as the Rosetta Stone, pivotal to initial shamanic arguments by Lewis-Williams (2002b).

TO THE BEST of my knowledge, the Kalahari San do not practice persistence hunting anymore, but it was still practiced in the early 2000s. Although running is not used to exhaust prey animals, it is still an important skill among the Kalahari San. Even hunting with a bow and arrow requires long-distance trekking and occasionally the wounded animal is tracked at a swift pace. The ethnographic evidence appears to suggest that although endurance running was used for hunting, it has also been an important method of transportation. The early humans often ran to hunt, but also to fight, to get to distant places, to send messages and otherwise keep in contact and help each other.

Long distance running is found from various indigenous cultures, and often it is tied to maintaining social relationships. This tradition is still evident in the canyons of the Sierra Madre in northern Mexico where the local Ráramuri (Tarahumara) gather together for kick-ball races. These ancient races bring people together to maintain social relationships, enable redistribution foods and goods, in the past they trained hunters, but they also promote health and fitness.

◆ RUNNING FOR VISIONS

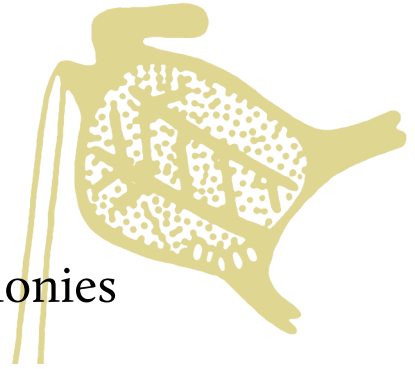
The Yurok people from northwestern California believed that there is a state of consciousness that enables them to skim over the bush tops on mountain slopes. This effortless gliding was known as the '*True running*'. The Yurok men and women engaged in training called *hohkep* to advance into greater interaction with the unseen forces of the world, trying to accumulate knowledge and control. They believed that this method of running could also become a sorcerer's weapon as well as means for positive growth. The trainee was taught to run fast with eyes closed to establish extrasensory relationship with the trail – to become one with the trail.

As the trainee advanced, more dangerous types of altered-state running might be learned. The trainee was taught to trust the energies of the surrounding world rather than their own and move into a light trance state to forget about the actual activity of running. The Yurok were excellent runners. American anthropologist Peter Nabokov (1981) writes about a race between a Yurok runner and a horse racer who raced from the Klamath River to San Rafael, almost 400 kilometers (250 miles) to the south. The runner won and was able to be at the finish-line waiting for the galloping horse-racer to join him. (Nabokov 1981, 144-145).

THE NATIVE AMERICANS often had running traditions and they were tied together with vision quests, spiritual awakening, enhancement of group cohesion. Running also served more practical purposes like persistence hunting, warfare, travel and communication (Nabokov 1981). Running also served a recreational purpose such as their games and races, but these events also had a deeper meaning for the people. Experiencing mild altered states of consciousness, such as sensations of enhanced unity and harmony with other people and with their lands, was also pivotal for some of these culture. Stronger hallucinations were also evident in some of these cultures which ran long distances to evoke vivid hallucinations. These experiences of altered states of consciousness appear to be the connecting elements between the running practices in the North America and the persistence hunting and ceremonial practices in Southern Africa. This will be examined more closely in the next chapter.

In the next chapter I will go further in my thesis and describe the possible cognitive processes behind people experiencing different altered states of consciousness, whether the subject is influenced by prolonged exercise, dance, pain, or by psychotropic substances. These experiences might be triggered by the same process, which could explain the similarities of these experiences and open the possibility that involuntary hallucinatory experiences during endurance running might be the origins for deliberately induced trance states in shamanic context.

10. Psychology of Healing Ceremonies and Running



This chapter describes how running effects our mind. The good feeling commonly referred to as runner's high is very exhilarating and one of the reasons why humans still find running very appealing. I will also describe the healing ceremonies of the Kalahari San, since I believe their trance dance has its origins in endurance running. Healing ceremonies also have a tendency to bind the people together. This aspect is also evident in Amazonian ayahuasca cultures, which is also mentioned here.

Running was connected to scavenging, hunting, travel and also escape. Humans have a physiological rewarding system to make them feel great during and after prolonged exercise. The activity itself makes them feel good, although there is no actual reward waiting for them. But in the past, it was a matter of eating a great meal or starving.

The hypothesis suggested by Arne Dietrich (2003) offers a very appealing theory, which we will find most useful. He suggests that the chemical reward system often related with the runner's high is not as important as the redirection of the brain's metabolic resources. He suggests that in order to save resources in our brain during strenuous activity, the brain's blood circulation changes. This change could produce mental experiences very similar to those induced by hallucinogenic drugs. The altered states experiences are claimed to be linked to the functions of the prefrontal cortex. Therefore we might suppose that endurance running is closely linked to our original experiences of altered states of consciousness. This brain region, prefrontal cortex, coincidentally happens to be one of the most important regions of our brain that was disproportionately expanded when we became humans.

"I have been running for 50 kilometers. The extremely hot midday sun is beating on me as I run north on Arambol beach in Northern Goa in India. I have never run this far before, but this time I have decided to do it. The last ten kilometers have been great. I took off my running sandals in Ashwem beach and crossed a surprisingly deep tidal pool. I continued running the beach barefoot. As I reached Arambol I paid a visit to one of the many beach shacks and refilled my water bottle and rinsed my salt-encrusted head. It was hot and humid and my exposed skin was burning in the sun. My only shield against the burning sun was the sunscreen, as I had no shirt with me. I had to cross an open sewer drain to get off the beach and I did my best to clean my feet before I put my sandals back on. I felt a bit wheezy in the sun, but I still had the energy to head back south for the last remaining 30 kilometers of my self-supported fun-run from sunrise to sunset."

This is a paragraph of my experience on my first successful attempt to run 80 kilometers, some of it barefoot but most of it in simple sandals. The reason for this trip was to test whether it was possible to run throughout the day without any serious athletic background. I had never done any sports before I started running less than two years prior to this experiment. I did not follow any training plans. I tried to eat normal non-processed foods and even during the run I only consumed coconuts and bananas with some nuts along with some water.

“Heading back down, running through the narrow bazaar corridors of Arambol was elevating. It was much cooler than on the beach, but I soon got out of the town, back to the open road, and the sun kept on beating my pale exposed Finnish skin. The exhaustion, heat and the monotony of the running was effecting me. I felt like laughing and crying at the same time. Occasionally I felt like stopping and when I walked a bit to have a drink, I had to fight to get back to running. To motivate myself I began listening to some music from my phone. Usually when a new song, to which I had some vague emotional attachment, started playing, I started crying profusely. There were no emotional restrictions left. I felt like an open wound. I also felt love and gratitude for life much stronger than I ever had before. Although I was going through an emotional roller-coaster ride, swinging back and forth from laughing to crying, in some strange way I was also calm and focused. I felt like becoming one with the whole world with all the living creatures in it. I felt a very deep compassion towards everyone and everything. I was happy. For a person who had been on antidepressants only few years earlier, it was a lot. It was amazing. I felt strange, but strangely great. I just kept on running.”

I did survive my first 80 kilometer ultramarathon with no problems. I was hyperthermic and my body temperature elevated a bit that evening and I was really tired, but that was it. I was fine. I had proven to myself that running in extreme heat is not a real issue for humans. This was not the last time I ran an ultra distance. For a person who was better adapted to run in this sort of heat it certainly posed no serious problems. After that I did not wonder how the ancient hunter-gatherers who painted the amazing paintings in the Dâureb/Brandberg, travelled 70 kilometers down to the coast to hunt seals and penguins, or to the nearby Erongo mountains some 90 kilometers away. A physically fit and able hunter-gatherer could have easily travelled that distance in one day without having the need to camp along the way. But the strong emotional experiences I felt on my 80 kilometer run made a very deep impact on me.

THE KALAHARI SAN, and obviously also the extinct nineteenth century rock painting hunter-gatherers of the Drakensberg, practiced persistence hunting by running down eland and other large animals as we have already discussed. Persistence hunting is a method of weaponless hunting that relies only on the exceptional human ability to read animal behavior and run long distances at endurance speeds enticing the animal into galloping longer than it is possible for the animal. This process ulti-

mately leads to hyperthermia, dehydration and overall exhaustion causing the animal to stop or collapse completely. Therefore the animal can be safely dispatched by suffocating it, clubbing it to death, or with a throwing spear from close range.

For the most Western readers this might sound like something that could actually have existed locally as a very rare exception, but according to David Carrier (1984), Dennis Bramble and Daniel E. Lieberman (2004), and Louis Liebenberg (2013), this was actually something that people successfully practiced, and with very good results. In an environment, which has optimal conditions for persistence hunting, it would actually be more effective than more modern means of hunting like atlatls (spear-throwers) or a bow and arrow. What makes the persistence hunting hypothesis very intriguing is the fact that it does not require any tools. We do not have to find any archaeological evidence to support this claim. The only weapon we need for persistence hunting is our own physical makeup. The only evidence we need is the fact that our ancestors were physically capable for long distance endurance running already about two million years ago combined with the evidence supporting occasional meat eating.

Persistence hunting depends on excellent knowledge of animal behavior and knowledge of the terrain. The hunter must know how the particular animal will react when it is pursued and how long it will be able to keep up with the chase. The hunter will also have a better disposition if it knows about the details of its surrounding. Is the animal heading towards more wooded areas for better shade and camouflage? Is it going to an area with herds of other animals to blend in? Or is it possible to chase the animal into open desert where it is easier to exhaust?

The endurance running abilities are not the only tools the hunter will rely on. It will be much more deadly if he has the cognitive skills to read animal tracks. The tracking hunter does not necessarily have to even see his prey until right before the final confrontation with the lethally exhausted animal. The tracker can construct a working hypothesis of how the animal might behave and where the hunter should run to find more signs of its activities. Therefore, the animal can be forced to run further distances and the hunter can take short cuts on easier terrain to save energy and still catch up with his prey.

We cannot know exactly how long ago our ancestors began tracking animals using complex hypotheses. Neanderthals were already excellent big game hunters, so it is fair to suppose that they already had fairly advanced cognitive skills for tracking. But according to Louis Liebenberg (2013, 128), only the modern human had the requirements for the most advanced speculative tracking. Human ancestors have scavenged and possibly even hunted for about two million years. The selective pressures have shaped our physical and mental abilities in such radical ways, since the endurance running adaptations have been in direct relationship with our existence. During extensive periods of time there was a tremendous pressure towards adaptations which ensured better success in hunting. There is no reason to suppose that endurance running and tracking skills did not affect other means of our expression, including rituals and symbolic culture, including language and visual art.

◆ HEALING CEREMONY

Healing is an integral part of the social structure of the San existence. According to Richard Katz (1982), healing is much more than just treating the sick and medicine use. Healing tries to maintain and promote physical, psychological, social and spiritual growth in addition to more general medical well-being. Healing brings together the individual, the group, the environment and the whole cosmos. Healing permeates the whole society and is an integrated and enhancing force. The all-night healing dance, which lies in the center of the whole healing concept, is the very essence of their whole culture. In a tiny egalitarian society, in which everything is shared, the presence and active involvement of everybody is necessary for the ceremony. Healing is a community event and the whole camp is actively involved in the process (Katz 1982, 34).

The San of the Kalahari still believe in the spirit world, which is inhabited by god and his family, herds of animals, the spirits of the dead (who shoot arrows of sickness into people), and strange monsters. The purpose of the shamans is to activate their *n/om* (supernatural potency) to cause it to boil up their spines until it explodes in their heads and takes them off to the spirit realms. In other words: the shaman's purpose is to enter the altered states of consciousness (Lewis-Williams 2002a, 139; Lewis-Williams & Challis 2011, 57).

The trans-cosmological travel of the San healers occurs in a communal dance, known as the medicine, healing, or trance dance. This ceremony is the central ritual of the San and it is still performed by the San of the Kalahari. All members of the group, men, women, children and visitors attend the ceremony. In present-day dances the pattern is circular with a fire, the source of potency, placed in the middle. The women sit around the fire in a tight circle, shoulders touching. They sing and clap the complex rhythms of the wordless *n/om* songs, which are believed to contain *n/om* (supernatural power or potency). The men, and also sometimes women, dance around the singers. The dancers stomp their feet and accentuate the rhythm with occasionally rattles tied around their calves. The dancers form a deep circular rut in the soft sand during this process. The dancers might also carry ceremonial fly-whisks, made from animal tails to flick away 'the arrows of sickness'. No-one seems to mind that children jokingly run around and mimic the shamans, the children's activities are not considered as disrespectful and they will be sleeping in their parents arms by the time the dance proceeds (Marshall 1999, 85).

The Ju/'hoansi do not use any hallucinogens to enter the altered state of consciousness. Instead, they enter the trance (!kia) with the help of *n/om* songs, intense concentration, audio-driving, prolonged rhythmic movement and hyperventilation. The dance begins at an easy pace, but volume and speed are continuously increased. The dance might continue from sunset well into the next day and it might be organized several times a week. More frequent dances are held when friends are visiting from another camp, when a large animal has been killed, or when the band is camped close to an abundant waterhole. When the community is dispersed the dances are more infrequent. (Katz 1982, 37; Lewis-Williams 2002a, 141).



Fig. 23. Ju/'hoan healing ceremony
//Xa/oba village, Nyae Nyae Conservancy, Namibia. December 2014.



Fig. 24. Ju/'hoan healing ceremony
//Xa/oba village, Nyae Nyae Conservancy, Namibia. December 2014.

It is interesting that the dance after a large animal is killed, is probably not held to celebrate the killing. Instead, it is probably held to ease possible social tensions that might be involved in meat sharing. The person whose arrow kills the animal is responsible for sharing the meat. The Ju/'hoansi believe that it was the poisoned arrow that killed the animal, not the hunter alone. Therefore, this encourages all men to produce good arrows, even they would be less skillful hunters, or physically disabled to participate in long hunts. The meat sharing always provides an opportunity previous social issues between certain members of the band to erupt. The healing ceremony is therefore arranged to purge any such social tension that might be brewing within the group. (Marshall 1999, 65).

The dance is an important part of the religious behavior of the San. Lewis-Williams reminds us that the dance is a terrible thing for the shamans. At times the shamans cannot control their potency from boiling over, and they fall down in cataleptic state, their bodies rigid. The /Xam told Bleek that occasionally shamans fell down trembling with lions hair growing on their backs. This transformation into a lion or other animal is central to the San spiritual experience. (Lewis-Williams 2002a, 141).

Just as the trance might be a terrifying thing for the San shamans, the same terror applies to ceremonies among the Amazonian shamanic cultures in Peru. Anthropologist Jeremy Narby (1999) studied the shamanic Ashaninka people living in Quirishari in the Peruvian Amazon's Pichis Valley in 1985. Narby was intrigued by the idea that the shamans got their knowledge of the medical and other properties of the forest plants in their trance hallucinations after ingesting Ayahuasca. Many people, including Western anthropologists have drunk Ayahuasca and reported seeing terrifying hallucinations of cosmic creation stories including monstrous serpents and dragons. The Amazonian indigenous cultures use Ayahuasca as a therapeutic tool. The group of people ingest the brew as part of a communal ceremony directed by the shaman. After the ceremony each of the participants describe their psychedelic experience. Usually it involves their possible fears, traumas and anxieties. The group uses these ceremonies to deal with complex psychological issues and find enhanced group cohesion.

This same group cohesion and intertwined spirituality and healing is also evident on the ceremonies of the Kalahari San. According to Megan Biesele: "*people became a unit acting together for mutual benefit, undivided by words. The dance thus embodies the values of egalitarianism and tolerance, and reinforces the idea of mutual effort against misfortune.*" (Biesele 1993, 76).

◆ EXPERIENCE OF BECOMING ONE

Among the Kalahari San cultures, the healing ceremony acts as a channel to purge any excess anxiety the individuals might be experiencing. The ceremony is the very essence of their whole culture, and the presence and active involvement of everybody is necessary for the ceremony. Healing is a community event and the whole camp is actively involved in the process (Katz 1982, 34). This is closely related to the social unitary experiences of the Native American running practices. Experiences in

altered states usually result in a sensation of 'mystical oneness', which can be achieved by prolonged exercise, meditation, dancing to music, or ingesting hallucinogens.

Hallucinogenic substances found in certain mushrooms, plants, and even in animals can act on the central nervous system to distort sensory and perceptual reality, and have been traditionally used on all continents, and among a wide variety of cultures. According to psychiatrist Rick Strassman (Strassman 1984; Strassman, Qualls, Uhlenhuth & Kellner 1994) the use of naturally-occurring hallucinogenic substances for inducing altered states of consciousness extends back to prehistoric times. There is evidence of the use of cannabis products and certain species of mushrooms that were used in India c. 7000 years ago. In the Americas, hallucinogenic mushrooms and certain cacti, barks, and vines were employed for similar purposes for probably thousands of years. Use of these substances was governed by cultural and ritual practices.

Mescaline, a hallucinogen derived from the peyote cactus, have been used in clinical research protocols from the late nineteenth century to the present. The effects of LSD were discovered in 1943 by Albert Hofmann. The general study of hallucinogens was extremely important for our initial understanding of the functions of the human mind, including affect, cognition, volition, interoception, and perception. (Strassman 1995).

The scientific studies of hallucinogens in the 1950s and 1960s were quickly aborted when the wide-spread recreational abuse of LSD had resulted in chronic effects and these cases caught the attention of the media and legislators. *The Controlled Substances Act* of 1970 decided to classify hallucinogens as Schedule I drugs. This category is used for substances with "high abuse potential" and represent a "lack of established safety" even under medical supervision "with no known use in medical treatment". (Strassman 1995).

After 1970 clinical research on hallucinogens was impossible. The first clinical experiment on hallucinogens was conducted by Rick Strassman and his colleagues in 1990 (Strassman, Qualls, Uhlenhuth & Kellner 1994) using a naturally occurring compound N,N-Dimethyltryptamine (DMT), which is one of the most powerful hallucinogens, but has no prior political connotations, as is the case with LSD. The DMT is considered as a true hallucinogenic and it is much more powerful than the milder LSD. However, the pure DMT is quickly absorbed resulting a very brief but extremely strong hallucinatory experience. The Amazonian Natives use DMT containing brew known as ayahuasca, which is an entheogenic concoction made out of *Banisteriopsis caapi* vine together with psychoactive leaves containing DMT. Although the DMT is easily digested by humans resulting in no hallucinatory effects (Strassman 2000, 53), but when it is mixed with vines of the *Banisteriopsis caapi* plant, which acts as a monoamine oxidase inhibitor (MAOI), the DMT absorption is delayed resulting in vivid hallucinations which can last for several hours. Ayahuasca has been used for possibly five thousand years, and it is quite astonishing that the people discovered the properties of the two combined plants (Narby 1999).

The DMT is a structural relative to serotonin and melatonin and functions the same way as other naturally occurring hallucinogens. More recently, Strassman

(2000) has claimed that DMT is a much more important compound than previously thought. He was drawn to DMT because it is also present in our own bodies. He believes that the pineal gland, a tiny organ situated in the center of our brains, is the source of the DMT in our bodies. Little is known about the role of our pineal gland's role, but it certainly has a rich metaphysical history including the idea of the pineal gland as the seat of the soul introduced by René Descartes. Strassman hypothesized that excess DMT produced by the pineal gland could be involved in naturally occurring altered states (Strassman 2000, 1).

The self-experimenting psychonauts of the 1960s and their abuse of wide range of hallucinogens combined with alcohol and more narcotic substances resulted in chronic effects and to some degree it was the reason why hallucinogens became illegal. The political turmoil around the hippie movement and the war in Vietnam and associated abuse of narcotics, including hallucinogens, ultimately resulted in the criminalization a whole range of drugs. This also ended the medical research on hallucinogens. However, Strassman's experiment, which began in 1990 (Strassman, Qualls, Uhlenhuth, & Kellner 1994) has led to completely new research in the area. Once more the hallucinogens are being scientifically studied. So far the results are very convincing.

Hallucinogenic treatment on terminal cancer patients was researched from the 1950s to the early 1970s to find solutions for anxiety, despair, and emotions of isolation. The reports were most convincing and encouraging, often resulting in sustained improvement of mood and relief of anxiety, but also decreased necessity of narcotic pain medication. Until the early 1990s, no clinical research on hallucinogens was conducted. Recent studies have preferred psilocybin with convincing results. (Grob, Winkelman & Roberts 2007, 213–214).

Psilocybin, (*4-phosphoryloxy- N,N -dimethyltryptamine*) occurs in nature in various species of mushrooms and it is similar to DMT, however the effects are milder. Psilocybin is rapidly metabolized to psilocin, which is a potent agonist at serotonin receptors, with one receptor activation directly correlated with human hallucinogenic activity. Recent clinical trials with psilocybin have suggested that it is not hazardous to physical health. Psilocybin is also considered to be more strongly visual, less emotionally intense, more euphoric, and with fewer panic reactions and less chance of paranoia than LSD, which also carries more unnecessary political baggage. (Grob, et al. 2011).

A more recent chemical hallucinogen known as MDMA (*methylenedioxyamphetamine*) or Ecstasy, which acts as a serotonin-norepinephrine-dopamine releasing agent, has also been tested on post-traumatic stress disorder patients with very good results. However, MDMA is not suitable for terminal cancer patients because of its demanding effects on the cardiovascular system. Psilocybin is also preferred for its greater capacity to catalyze transcendent and psycho-spiritual states of consciousness leading to more therapeutic outcomes. (Grob, Winkelman & Roberts 2007, 214).

Hallucinogens have also appeared to be a solution for relieving anxiety in terminal cancer patients. Some patients with some profound anxieties connected to

existential spiritual crisis have found help from hallucinogenic treatment. This treatment has appeared to ameliorate and intervene in the emotional and spiritual suffering of dying patients, who have reported transcending their primary identification and experiencing ego-free emotions, which have opened new perspectives for a new, more profound acceptance of life and how it will soon come to an end. This acceptance has resulted in an altered approach to their remaining moments in this world. This acceptance has also resulted in an enhanced solution for their prior experiences of panic, fear, pain, existential anxiety, despair, and isolation. Without their prior imaginary dependency on something that they had previously found so overwhelming, they have been able to transcend their anxiety. (Grob, Winkelman & Roberts 2007, 213).

The experiences described above are the same reasons why the Kalahari San practice healing dances and why some of the Native Americans run long distances. The altered states of consciousness that follow prolonged running, if they served a social purpose as binding element which eased the existential anxiety, could possibly be seen as the origins for the shamanic ceremonies. If there was an element that made the running experiences so profound and important, it could have led to deliberately set up events which aimed to altered states of consciousness.

◆ RUNNER'S HIGH

Humans love running. It has been and instrumental activity in developing our body, but also our mind. The neurochemical phenomenon often referred to as 'runner's high' (Pargman & Baker 1980) occurs during moderate and intense prolonged aerobic activity. Running makes you feel good and there might be an evolutionary purpose for it. According to Dennis Bramble and Daniel Lieberman (2004), our ancestors were dependent on endurance running for millions of years. It was a way to get food, to move around, and a way to escape. It is natural to think that this activity we once depended upon so much, would also make us feel good. But it is not just the end results that makes us feel great. It is also about getting food, getting from place to place or successfully escaping charging beasts, but it is also the activity itself that makes us feel great.

Humans have a biological method of receiving neurobiological rewards during and after prolonged aerobic activity, just like we receive neurobiological rewards during sex. This *exercise reward* is popularly referred as '*runner's high*', which also encourages us to exercise. The physical sensation is often referred to the flow sensations and unitary experiences. The physical sensation is well acknowledged, but the biological process underlying these emotions is fairly speculative.

Exercise physiologist Phillip B. Sparling and his colleagues (Sparling, et al. 2003) replaced the old speculations of endorphins with their idea of endocannabinoid system. Runner's high might be a product of these endogenous neurotransmitters known as the endocannabinoids (Sparling, et al. 2003; Raichlen, et al. 2012). Endocannabinoids are endogenously produced cannabinoids similar to THC (*Tetrahydrocannabinol*, the main psychoactive component in cannabis and its derivatives),

which mimics the cannabinoids made by the mammalian body causing similar sensations (Cecchini & LoPresti 2007).

This process is not limited to humans. Other running mammals experience this same reaction. Exercise-induced endocannabinoid signaling also motivates habitual high-intensity locomotor behaviors in other running mammals. The process acts as a reward system, so that the animal will enjoy the intense exercise and take pleasure in the sensation that follows. Anthropologist David A. Raichlen from the University of Arizona agrees that endocannabinoid signaling might explain why humans and other running mammals often engage in intense aerobic exercise despite the high energy cost and elevated injury risk (Raichlen, et al. 2012).

Our own body has receptors ready to accept THC from cannabis, because we have an endogenous system built into our bodies. The THC just mimics this system and results in the same effects that we can induce by exercise. According to Strassman (2000), we also have a similar endogenous system for the much more potent hallucinogen known as DMT, which also occurs in our own body. However, little is known about how to induce the process of this compound, but it appears to be related to many self-generated hallucinations.

◆ TRANSIENT HYPOFRONTALITY

According to neuropsychologist Arne Dietrich (2003) from the American University of Beirut, altered states experiences are not necessarily caused by endogenous neurotransmitters or chemicals such as cannabinoids or DMT. The idea of endogenous neurotransmitters is contradictory with the very strong hallucinations reported by ultrarunners. It is also inconsistent with other means of inducing hallucinations, such as prolonged fasting, pain, holding breath, or prolonged dancing. We cannot know exactly what a person who is experiencing deep hallucinations is going through. We cannot sense the same sensations as the person might be experience in altered states. There is no way of recording these individual experiences. However, this does not differ from any other experiences. We cannot, for instance, know exactly how a person experiences the color red.

Dietrich claims that all altered states of consciousness are principally caused by temporally reduced metabolism in the prefrontal cortex. This is what Dietrich refers to as '*transient hypofrontality*', which can be triggered by hallucinogenic drugs or through various activities such as prolonged exercise. This idea was based on his studies on the prefrontal pathology in depression and anxiety disorders. He noticed that exercise induces a state of transient hypofrontality, which could have beneficial effects on mental health. (Dietrich 2003, 240).

Transient hypofrontality does not apply only to exercise, but the same principal can be used to explain various studies of dreaming, endurance running, meditation, daydreaming, hypnosis, and various states induced by hallucinogenic compounds. Runner's high, according to Dietrich, generally refers to mild sensations experienced during prolonged aerobic exercise. The described experiences include happiness, elation, feelings of unity, peacefulness, timelessness, inner harmony, boundless en-

ergy, and reduced sensation of pain. These sensations are similar to experiences reported by people who have experienced trance states (Dietrich 2003, 239).

The prefrontal cortex is not a single unit with one specialized function. Functionally it is divided into ventro-medial and dorsolateral aspects, which are both responsible for certain cognitive abilities. In addition to these, there is also visible hemispheric specialization, suggesting that some cognitive functions are indeed specialized even within the frontal lobe. According to Dietrich (2003), the ventro-medial prefrontal cortex is very closely associated with social functions. Damages to this area would cause frontal syndrome, which causes inappropriate social behavior, difficulty in planning for the future and/or difficulty in maintaining a plan of action. It also results in a lack of moral judgement, decreased social inhibitions, and compromises the abstract thought process. Semantic memory is one of the aspects implemented in the left dorsolateral prefrontal cortex. Therefore any deactivation of this area would effect your accumulated general knowledge of the world, causing you to lose sense of facts, ideas, shared meanings and concepts, and all those aspects that are culturally shared and respected. (Dietrich 2003, 233).

Arne Dietrich (2003) notes that there is an extensive range of studies suggesting that depression is also associated with the functions of the frontal lobe. Functional neuro-imaging studies (PET) conducted on patients with depression have demonstrated significantly high metabolism in the dorsolateral prefrontal cortex. Therefore Dietrich proposes that transient hypofrontality sparked by endurance running could have beneficial effects on mental health. (Dietrich 2003, 239-240).

During endurance exercise, a large part of the brain is occupied by perception and motor output resulting in numerous activations across the entire brain. Strenuous physical activity demands a huge sacrifice of the resources in every part of our body. This includes our brain, and the physical workload forces the neural resources in the brain to redistribute. The multi-layered neural activation that occurs as one begins to run, is highly expensive for the available resources. There is limited capacity for information processing, particularly of information that is related to higher cognitive systems of the prefrontal cortex and limbic systems, such as amygdala. Activation on these centers is not pivotal to maintain when the resources are needed elsewhere to enable the endured running, this naturally results in deregulation of unnecessary functions of the brain, causing altered states of experience (Dietrich 2003, 240).

Endurance runners have reported experiences which they consider positive, soothing and even exhilarating. Their emotions include sensations of timelessness, enhanced sense of presence, reduced sense of one's surroundings, peacefulness, floating sensations and even more drastic emotions such as unity with the self and/or nature. All of these emotions are possible to explain with Dietrich's hypothesis of transient hypofrontality. After all, the prefrontal cortex is the very structure in our brain that provides us with the ability to segregate, differentiate, and analyze the environment and objects (Dietrich 2003, 241).

The mystical oneness, the merging with the environment or similar experiences, comes simply because your body no longer have the computational capacity to compute the difference between you and the other. So you become one with it. The

calm of this experience simply results from the relief that you no longer have to extract yourself from the thing you are merging with. Dietrich believes that endurance exercise impairs frontal-dependent cognition, generating a state of enhanced vigilance and awareness. The generated mental state produces an enhanced awareness and inability to focus on more trivial worries (Dietrich 2003, 241).

According to Dietrich (2003) the transient hypofrontality hypothesis could explain various altered states experiences. It is relevant to experiences caused by endurance running or hallucinogenic compounds and it could explain some experiences also involved in meditation. According to Dietrich, the idea that hallucinogens cause neurochemical reactions to trigger altered states of consciousness is inadequate and we should not put too much stock in it. Dietrich suggests that a more comprehensive theory of this process should consider the functional neuroanatomy. Dietrich suggests that psychoactive drugs induce altered state of consciousness by temporarily decreasing prefrontal activity. This can be caused by the drug's primary function or as a secondary consequence. Therefore, Dietrich suggests that hallucinogens do not 'expand' your mind, but rather reduce it by limiting the maximum capacity for consciousness. (Dietrich 2003, 248).

THE IDEA OF temporarily decreasing prefrontal activity was studied by the British neuropsychopharmacologist Robin Carhart-Harris and his colleagues (2012). They used arterial spin labeling perfusion and blood-oxygen level-dependent fMRI to map cerebral blood flow and changes in venous oxygenation before and after intravenous infusions of strongly hallucinogenic psilocybin. They observed predictable profound changes in consciousness after psilocybin. These hallucinations were caused by decreased cerebral blood in particular brain regions. These decreases took place in hub regions, such as the thalamus and cingulate cortex. (Carhart-Harris, et al. 2012, 2138).

Decreased activity was also measured in the anterior cingulate cortex and medial prefrontal cortex. They also conducted another study based on these preliminary findings and found out that psilocybin caused a significant decrease in the interaction between the medial prefrontal cortex and posterior cingulate cortex. Their study implies that the effects of hallucinogens are caused by decreased activity and connectivity in the brain's key connector hubs, enabling a state of unconstrained cognition. The medial prefrontal cortex was consistently deactivated by psilocybin and the magnitude of this reaction correlated with the intensity of the hallucinations. All of this correlates with Dietrich's (2003) hypothesis of transient hypofrontality. Their study also discussed the possible effects on depression and anxiety patients, who suffer from increased activity in the medial prefrontal cortex. (Carhart-Harris, et al. 2012, 2138; 2142)

◆ EXPANSION OF PREFRONTAL CORTEX

The expansion of prefrontal cortex has also been claimed to have played a very important role in human evolution. According to Merlin Donald (2009) the root of mimetic behavior, which is the very foundation of all the features that makes us human, was connected to the expansion of the prefrontal and premotor cortex in *H. erectus* about two million years ago. This was one of the biggest physiological adaptations, which enabled the development of mimetic behavior. According to Arne Dietrich (2003) temporal deregulation of this area results in conscious awareness of altered states of consciousness. According to Donald, the cognitive significance of this development relies on the fact that this brain region in humans, and other social mammals, controls the balancing of actions and behavior (Donald 2009, 15).

The excessive growth of the frontal lobe in relation to other brain regions, enabled more refined motor control in early *Homo*. The updated frontal lobe also gave raise to self-control and meta control. The new skills of meta cognition enabled differentiated working memory and the ability for introspection. This is probably how our ancestors learned to monitor their own actions and refine their own skills. It also enabled reflection of their own cognitive processes to some extent. (Donald 2009, 15-16).

Four key mimetic abilities are: the skills of action, imitation, gesturing, and the ability to practice new skills, no matter how trivial they are. Humans are exceptionally talented in all of these skills compared to other apes. Mimesis requires a bunch of skills, enabled by evolutionary adaptation. This adaptation was helpful for our ancestors in changing environments and gave them a better chance to survive and produce more offspring. Mimesis explains our irresistible ability to imitate others and follow the activity of the group, especially the expression of emotions of the group. Donald describes mimesis as providing the general tone for human social life, and it being the primal force behind art in a later stage of human evolution. (Donald 2009, 15).

Humans learn astonishing amounts of various skills during their lives. They do sports, play music, ride bicycles, write and talk. All of these skills have been learned and fine-tuned through mimetic action. Donald suggests that mimesis is also the original source of culture, if culture is understood as a type of community of mind. When we put a small group of people together with their own mimetic behavior models and actions together, the outcome is inexorably complex social play and a crude version of human culture. (Donald 2009, 17).

According to Donald, mimetic action and behavior was the origin of culture. It enabled human language, and other means of symbolic thinking, and it might have been the key for enabling culture in the early stage of human evolution. Other apes never could achieve a similar form of social activity. They are just much worse at creative imitation. Apes are also practically incapable of intentionally inventing some new and novel forms of activity and systematically developing it further. However, apes do have traces of mimetic ability. A trained bonobo named Kanzi from Georgia State University in Atlanta understands rudimentary grammar and uses a lexicon of several hundred symbols, but has never learned how to play basketball, because it has no meaning for him. (Donald 2009, 18).

DIETRICH'S HYPOTHESIS SUGGEST that the altered states of consciousness of endurance runners and the trance dancers of the Kalahari are caused by the same principle which causes the intense hallucinations induced by strong hallucinogens such as LSD, DMT and psilocybin. However, experiencing mild sensations of improved mood and reduced pain reported by the majority of the runners, are very different from what people have reported experiencing in deep trance states under the influence of strong hallucinogens. What if these people with mild runner's high just have not run far enough? The Kalahari trance dancers continue their dance throughout the night and it often takes several hours before they fall into trance. The vivid hallucination experiences are very evident in accounts by the ultra endurance runners who frequently run distances that can take several days to cover.

◆ MERGING AND TRANSFORMATION

Prolonged physical stress causes endocannabinoid signaling and reduces stress and pain and this makes you feel good. Exercise itself, although it costs precious calories and exposes you to elevated injury risk, makes you feel great. This process commonly known as runner's high might have posed a selective advantage for endurance running adaptations. However, prolonged exercise also causes temporary deregulation of the prefrontal cortex, which leads to vivid hallucinations similar what has been reported with strong hallucinogens.

Ultrarunners often experience sensations of merging together with the environment and their own body transforming into something else. These characteristics are universal. All humans have the ability to experience these altered states of consciousness and according to my own inquiry from my ultrarunning contacts, turns out the altered states experiences appear to be much more common than supposed, although there seems to be no related proper studies conducted.

If there was a method of acquiring high quality foods in the past by running long distances, like in persistence hunting, or if exercising for a prolonged period of time provided some other selective advantages, there is a good chance that altered states experiences would have been much more closely tied to everyday lives of the early humans. This would suggest that altered states experiences were caused by human activity targeted to practical tasks such as hunting and possibly even to long distance travel. The conscious acknowledgment of these altered experiences and purposefully designed ceremony to induce the same experiences, would have been the natural first step towards shamanism.

According to the traditional view on shamanism we would have to accept the notion that experiences of altered states of consciousness were only sought after in designated ceremonies, only after there was a social need for it. This would demand larger social groups and possibly even complex language. But I believe persistence hunting played an important role also in the development of shamanic practices and rituals. The altered states experiences were probably well understood by the running hunters before they established specific ceremonies to summon these sensations.

In my view, the altered states of consciousness, deliberately induced by ceremonial dances, inflicted by psychotropic plants, during persistence hunts, in vision quest runs, and hallucinatory experiences of modern ultrarunners, are all related. Arne Dietrich's hypothesis of transient hypofrontality supports this claim. He suggests that all of these experiences are related. No activity nor substance provides specialized neurotrophins, which would give special experiences. The localized deregulation of blood flow appears to be the process related to all of these experiences which inflict the experiences of altered states.

These experiences should be evaluated in the context of selective pressures. Persistence hunting certainly would have been an advantageous ability and it could have been practiced by the ancient hunter gatherers. Natural selection would have favored endurance running adaptations if they ensured a constant food source for our ancestors. Subtle stages of runner's high also explain the positive feedback of this activity. Altered states of consciousness experienced during endurance running could have led to more abstracted means of ceremonial practices. In my view, we can suppose that endurance running and especially persistence hunting is so important part of human evolution, that there is no reason to believe that it would not be visible in ancient rock art.



11. Cultural Evolution

This short chapter functions as a bridge between the previous and remaining chapters. The previous chapters have been dedicated to the lives and cultures of the hunter-gatherer societies and especially different aspects of persistence hunting. The following chapters will deal more closely with Prehistoric and more recent rock art and how persistence hunting and tracking might be visible in these examples. But before we go further I would like to bring Merlin Donald's views on human evolution under our consideration once more. In my view, visual culture probably emerge alongside shamanic rituals and practices, as David Lewis-Williams has suggested, but there might have been an underlying background rooted in hunting experiences. Persistence hunting (and running in groups in general) just like shamanic rituals and visual culture, form, maintain and enhance social cohesion and group competence. The first image-making cultures and individual image-makers must have had a powerful need to express some important experiences, which were difficult to express in other means of human expression. These experiences were also considered so important that it had to be shared among their own community, but also among larger collective groups. We have no ways of knowing this for certain, but there could have also been an idea of passing these experiences even further into the future and share them with the upcoming generations.

Making images and using visual symbols for spreading and sharing knowledge was obviously a giant leap in human cultural evolution. It gives us evidence of human symbolic and possibly even ritual behavior. Merlin Donald (2001; 2009) has been interested in the evolutionary adaptations which enabled these qualities. He claims that about two million years ago we adopted features which made our ancestors much more humanlike. They evidently became much more capable of group work and acquired several new adaptations which gave them a certain advantage on the pressures of natural selection. These adaptations enabled them to become fully-fledged hunter-gatherers. Before this transition our ancestors were mostly plant-eating opportunistic scavengers hunted by other predators. The evolutionary adaptations made them more efficient hunters who could face the natural dangers such as natural elements and predators, much more effectively.

In my view, visual culture was an extremely important element, which enabled visual storytelling of issues related to complex, emotionally powerful experiences, which were considered important. It also bound together larger and more dispersed populations. It gave them unity, but also created social hierarchy, and group identification method. Although shamanic rituals are often considered to be the very

essence of their lives, I still consider visual culture had more ancient origins and it could have evolved gradually alongside ceremonial and ritual practices, which could be considered as shamanic, but had more obvious roots in the continuous and arduous human quest for food.

VISUAL CULTURE, CEREMONIAL customs and ritual practices are universal to all societies and they are qualities that are unique to our species. These traditions certainly have very ancient roots. The roots of these traditions are possibly connected with the very traits that made us more skillful hunters. Merlin Donald (2009) is curious about the evolutionary origins of art, because art is simultaneously universal and species-specific, but the study of human evolution is especially difficult because it is hybrid by nature; it contains the coevolution of biological and cultural forces. Donald believes that art is pivotal and the most interesting phenomena in this process. Donald explains how human cognitive domains formed in three consecutive stages.

1. **Mimetic culture** (two million years ago). Mimesis enabled imitation and through rituals humans learned to handle fire and the skill of tool making. These traits were soon dispersed. Mimesis also set the stage the future evolution of spoken language. (Donald 2009, 8).
2. **Mythic culture** (150 thousand years ago). Mythic culture is based on spoken language, especially storytelling, which is a natural social product of spoken language. Most societies have numbers of diverse stories that are based on myths. These stories play an important role defining how to conduct oneself inside the culture. The myths also contain notions of authority, gender and morality. Mythic culture has mimetic culture embedded within it. It often appears in rituals, clothing and habits of action. All of these factors are clearly visible in diverse forms of art. (Donald 2009, 8).
3. **Theoretic culture** (the last two thousand years). Theoretic culture is a much more recent stage in historical development. It started very slowly at the same time when sophisticated writing techniques and complex scientific instruments started to appear. After prolonged development the theoretical culture became the dominating worldview in the post-enlightenment Western world. (Donald 2009, 8–9).

These stages are of course crude estimates, and one must remember that each successive stage remains when the new one is introduced. The previous layer still serves its own specified cognitive purposes, when the new structure is layered on the previous foundation. Although art is a fairly recent development in the long history of humankind, it still bears something of these stages of cognitive development. Visual culture and 'art' in general is a reflection of this cluster of cognitive cultural evolution. Donald claims that 'art' is such an important factor of cognitive domains that it can be used as evidence describing the character of prehistoric culture. (Donald 2009, 8).

Donald reminds that the modern mind has all the previous evolutionary stages stockpiled together in its complex structure. The mimetic domain evolved gesturing, pantomime, dance, visual analogy and rituals very early on. These abilities formed a layer that was primarily formed by culture based on action metaphor. This enabled humans to effectively simulate emotions and act out your own experiences. (Donald 2009, 8).

Although art is a fairly recent development stage in this very long cognitive history of humankind, different forms of art still reflect all of the mentioned cognitive and cultural areas. The diverse nature of art reflects the rich historical background of the human mind and culture. Donald lists different kinds of art as mimetic, mythic and theoretical culture. Many works of art reflect all of them simultaneously, for example contemporary painting, architecture, poetry and music. The central argument of Merlin Donald is that the new forms of human cultural behavior are always built on the old and from this it follows that art is basically a reflection of the mimetic culture, which is the oldest layer in the human development, and the most ancient form of representation of the human experience. (Donald 2009, 9–10).

◆ ART AS COGNITIVE ENGINEERING

Merlin Donald (2009) summarizes his arguments listing the key features of art. Art is form of cognitive engineering, it is always aimed to influence the minds of the audience. Art occurs in the context of distributed cognition. Art is constructivist in nature, it refines and elaborates our worldviews. Art is metacognitive, it engages in self-selection, both individually and socially. The role of the artist is a product of the current social cognitive network. (Donald 2009, 19).

Donald claims that the roots of mimetic expression are in the most ancient layers of human evolution and the ability to produce and understand art is an expressive culmination of the oldest feature of the human mind. This feature is visible in rituals, public behavior, and gestures that define all human societies. Art is the meaning that fundamentally makes humans different from other creatures. (Donald 2009, 19).

Art is an activity which is built on human culture and it is a product of human cognitive evolution. Donald thinks that the roots of art exist in the shared understanding of artists and audience. Interaction between these creates a complex cultural cognitive activity area, which is reflected in art. According to Donald, art should be understood as cognitive technique. Art is activity, meant to impact the minds of the audience. Many artists try to control the attention of the audience, leading them towards a carefully designed experience. (Donald 2009, 4).

This purpose would have been important for the Paleolithic image makers. The cognitive impact of the beautifully painted caves, such as Lascaux, is staggering. We are used to our contemporary visual attractions and spectacles, but we are still flabbergasted by the Lascaux. It really hits us hard. The same principal is also present with the Sistine Chapel ceiling fresco by Michelangelo from the early sixteenth century. The cognitive effect of these places cannot be escaped.

VISUAL ARTS, AND many other forms of artistic expression, are always aimed at this cognitive outcome (Donald 2009, 7). That outcome is a new experience. Products of art are designed to formulate specific state of mind in an audience. They will always be judged according to its effectiveness in producing cognitive experiences. The central functions of this activity are always cognitive, whether it is a cave painting, or a cathedral.

All kinds of artistic expression is always formed in the context of shared consciousness. Modern human cultures could be seen as massive networks of shared customs and activities, and institutional structures that direct the flow of ideas, memory and knowledge. Donald (2009) reminds that artists are important members of our cultural social web. The shared activity is strongly influenced by the artists of any era of human civilization. The activities and productions of these artists are always directed at purposefully enriching and recreating worldviews. Donald even suggests that this might have been its original purpose just as well. The image-makers wanted to share something they considered deeply important for the general existence of their own species. This ability would have certainly been beneficial in the selective pressures.

HUMAN CULTURE IS fundamentally a shared cognitive system, in which worldviews, habits, customs, beliefs, and practices are formed and shared. The prehistoric image-makers, and the artists of our own time, have played an important position in this process. We might assume that most art is self-reflective. A visual rendering on a rock wall forced the audience into reflection of the artist's intentions and some important and complex emotionally rich experience was elaborated, shared and passed on. Donald (2009, 5) claims that art might have evolved from the human inert quality of self reflection. This might be the reason why visual arts have been inseparable in defining cultural eras.

Visual arts have always provided societies with complex and sufficient symbolic and allegoric structures of identification. A painting, an engraving or a piece of sculpture is always based on human experience. They reflect the worldviews, hopes, fears, and beliefs back to the members of the society. In some cases these pieces have lasted for tens of thousands of years and due to their often allegorical nature (and the fact that these people inhabited such a strange world and culture to us) we might experience major difficulties interpreting them.

We can either just marvel at the aesthetic qualities of these productions, or we can try to find out the deeper meanings. I believe the visual arts relate the most important experiences these ancient people were faced with. I also believe that by understanding the methods which they employed to provide food for themselves and for their families, we might also understand their visual legacy. I am not merely referring to the practical aspects of hunting and gathering. Rather, I am referring to the altered states experiences the ancient persistence trackers and persistence hunters might have encountered. These experiences might have evolved into ceremonies in which the altered states experiences were tried to induce deliberately.

12. The Earliest Examples of Representational Visual Culture

This chapter will continue the discussion about the peculiar events that took place in Western Europe. It was a significant event in which the modern humans invaded and appropriated lands from its indigenous inhabitants. In this case the humans invaded the territory of the Neanderthals, but since then humans have continuously invaded indigenous human populations. I will also briefly mention some of the earliest findings of rock art and portable art. I will also try to accentuate the fact that image-making might have been a practice, which was not invented in Europe, but rather was brought there from Africa. Therefore, there might not have been any transitions, creative explosions nor revolutions, but rather a mere continuum of already existing practices.

The transition from Middle to Upper Paleolithic industries took place between 45,000–35,000 in South-Western France and Northern Spain. During this era modern humans (*H. sapiens*) first appeared in large numbers in this area. There are also plenty of examples of human-made artifacts, but most importantly the first examples of image-making cultures appear. The simultaneous appearance of modern humans and their modern behavior and complex visual culture seems to have been a package deal, but was it really? David Lewis-Williams claims that image-making was not an end of events, rather it appears to be an active component in a chain of various interlinked features (Lewis-Williams 2002a, 71–73).

It appears that the earliest dated examples of representational images were made by modern humans living during a particular era in a particular area influenced by a particular social context. But was the image-making tradition really ignited when the environment was tamed and people had enough free time to themselves in Europe, as Lewis-Williams (2002a) suggests, or was it something that humans brought along with them as they moved into Europe? Is it just a massive coincidence that there is so much evidence from Europe and barely nothing elsewhere?

The archaeological evidence from Australia suggests that in Arnhem Land in the Northern Territory pigment art on rock walls of some kind was being made by around 50,000 years ago. This is evident from the use of ochre crayons of that age (David, et al. 2013; Roberts, Jones & Smith 1990). The prehistoric cave paintings (Fig. 25) from Sulawesi island in Indonesia (Aubert et al. 2014) now suggest that modern humans had this tradition long before the emergence of Paleolithic cave paintings in Europe. They possibly carried this tradition already when they left Africa about 60,000 years ago. It is possible that the images painted elsewhere, besides the deep limestone caves, have just eroded and faded away.

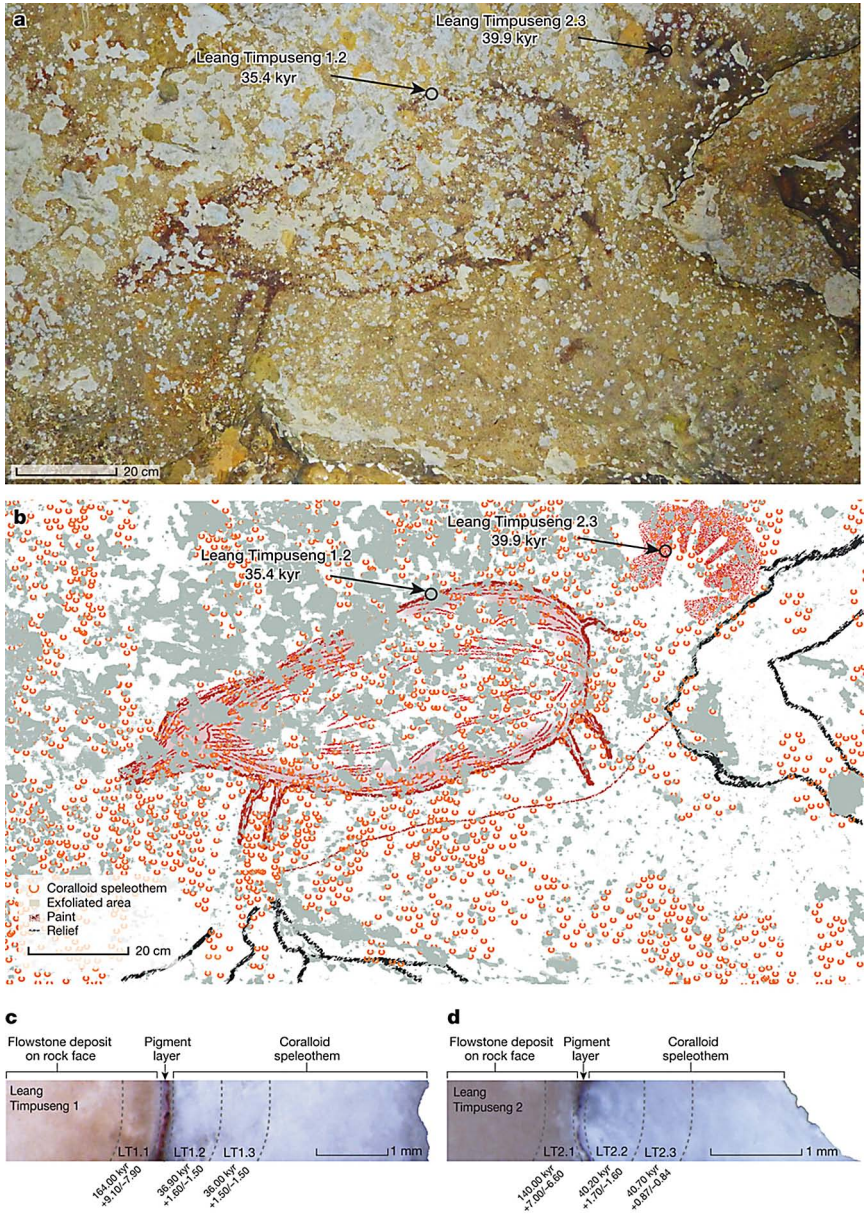


Fig. 25. 35,400 year old painting of a Babirusa and a 39,900 year old hand stencil Leang Timpuseng, Sulawesi, Indonesia. Tracing by Leslie Refine 'Graph & Co' (France) *Nature* (Aubert, et al. 2014, 224).

◆ THE ENVIRONMENTAL CONDITIONS

Western Europe, its flora and fauna, and also its people were very much different from what we can even try to imagine today. The temperature was very different, the trees and other plants different, and even the moisture level of the air was different. According to R. Dale Guthrie (2001; 2005) there were no clouds in the clear-skied and windy Europe during the Pleistocene.

There is no clear evidence of the visual appearance of the people who came to Western Europe about 45,000 years ago. Their skin was probably dark and it possibly stayed dark until the advent of agriculture around 10,000 years ago. There is even evidence from northern Spain suggesting that the local hunter-gatherers were dark-skinned as recently as 7000 years ago (Olalde, et al. 2014). Interestingly enough, the people who lived in southern Sweden during the same time already carried the gene that makes Scandinavians light skinned, blond haired and blue eyed (Mathieson 2015). The first modern humans who lived through the Pleistocene could possibly be dark skinned, but at least some of the Neanderthals could have been light skinned (Lalueza-Fox, et al. 2007).

The hunter-gatherers of the Pleistocene Europe had plenty of resources, although the environment was very cold and arid. The archaeological remains suggest that they did not spend their entire life in hunger. They were considerably tall, suggesting they had plenty of good quality foods to eat. According to Vincenzo Formicola and Monica Giannecchini (1999), Upper Paleolithic (18,000 years ago) samples of human stature indicate that Cro-Magnons were very tall. However, Western Pleistocene–Holocene transition groups (10,000 years ago) from Western Europe, compared to their ancestors, show a noticeable decrease in height. The Paleolithic hunter-gatherers were taller than the farmers c. 8,000 years later. The average height of Cro-Magnon's was 176,2 centimeters (men) 162,9 centimeters (female), respectively. Compared to early farmers 10,000 years ago, who were only 163,1 (male) and 151,3 (female) centimeters tall. (Formicola & Giannecchini 1999, 325).

According to Guthrie (2001; 2005, 18–19), the vast Pleistocene steppe, also known as the Mammoth steppe, was an enormous and a very special cold and arid grassland continuing from northern Spain all the way up to Alaska. It was surrounded by moisture-blocking features including high mountains to the south and frozen seas and massive continental glaciers to the north. The gulf stream was also pushed down south towards Africa. This resulted in clear skies during much of the summer and winter and kept annual rainfall low. This kind of environmental conditions are extremely rare in our contemporary world. There are only small patches of steppe left in north-central Asia, which are scattered into boreal habitats, but can provide some rough analogs to the Mammoth Steppe of Pleistocene.

According to Guthrie (2001; 2005), the clear skies resulted in warmer summer temperatures compared to today, but also colder winter conditions. Especially woolly mammoth, steppe bison and woolly rhino were perfectly adapted for the vast grasslands of the Mammoth steppe, since their diet generally consisted of grasses. The standing biomass of the Mammoth steppe vegetation had less leafy mass than is found on today's northern landscapes. The steppe had a higher energy and nutrient

turnover. The clear skies resulted deeper roots, a longer growing season, early snow melt, and likely late snow arrival, making it ideal for masses of large grass feeders.

There were also even more exotic animals living in Europe during the Pleistocene. There were cheetahs, hyenas, and there are herds of cave lions depicted in the Chauvet cave, and penguins and seals depicted in the Cosqueur Cave, which is an underwater cave in the Mediterranean just outside Marseille (Clottes, et al. 1992).

◆ POPULATION DENSITY

The movements of these migratory animals would have been fairly easy to predict and Lewis-Williams (2002a) suggests that the population density of Upper Paleolithic humans would have been close to the same numbers as early farming populations. This is the environmental context in which the earliest dated representational paintings and statuettes appear in Europe. Before 45,000 years ago, these lands were ruled by the Neanderthals, but only ten thousand years later they had vanished from France. The last remaining Neanderthals lived in caves in modern-day Gibraltar in the Iberian peninsula and became permanently extinct 40,000 years ago (Higham, et al. 2014).

Recently anthropologist Miikka Tallavaara with his colleagues (Tallavaara, et al. 2015) from Helsinki University and the Finnish Meteorological Institute, have calculated the population densities in Europe from 30,000 to 13,000 years ago. Their study claims that population dynamics were driven by climate fluctuations with population ranging between 130,000 and 410,000 individuals. Their study also reveals that the population densities in Southern France plummeted about 27,000 years ago and remained that way for about 10,000 years. (Tallavaara, et al. 2015). This might explain why there is a significant 'artistic' gap between some painted caves. The images in the Chauvet Cave were painted about 37,000 years ago. Most of the decorated caves after the spectacular Chauvet Cave are extremely modest until much later. For example, the Lascaux Cave was not painted until almost 20,000 years later.

Recent radiocarbon dating has revealed that the Neanderthals probably perished much sooner after the Cro-Magnon invasion. Higham and his colleagues (Higham, et al. 2014) have claimed that many of these earlier dates were flawed and resulted in much more recent dates due to contamination of the samples. The Neanderthals had probably vanished from the Gibraltar 40,000 years ago.

◆ MATERIAL DECORATIONS AND BODY PAINTING

David Lewis-Williams claims that there are significant innovations that show apparent changes in mental and social abilities during the Middle to Upper Paleolithic transition in Western Europe. Lewis-Williams suggests that Upper Paleolithic humans behaved in a significantly different way compared to their Middle Paleolithic ancestors. (Lewis-Williams 2002a, 82).

Social hierarchy is clearly visible in Upper Paleolithic funeral ceremonies. There is an interesting Upper Paleolithic burial site in Sungir, Russia. About 32,000 years

ago these people buried two adolescents lying on their back with hands crossed on their waist. One of these youngsters was covered with 4,903 individual carved ivory beads and with other decorations like a belt with 250 polar fox canine teeth, a carved ivory pendant in the form of an animal, a straightened mammoth tusk spear, and several similarly precious items. The other child was buried with comparable valuables, like 5,274 ivory beads. Lewis-Williams notes that it takes about 45 minutes to carve such a bead. It took 3,500 hours of labour to carve those beads. The sheer amount of objects refer to the fact that these children were highly-regarded in their society. This Upper Paleolithic group could not have been an isolated band of hunters. These children were members of a large, extended social network of modern humans. (Lewis-Williams 2002a, 80).

Humans have been wearing beads as decorative ornaments for probably as long as there has been symbolic behavior on modern humans. So far the oldest examples of mollusk shells beads comes from the Blombos cave on the southern coast of South Africa. These beads date back to c. 75,000 years ago (d'Erricoa, et al. 2005; Henshilwood, et al 2004). Shell ornaments are possibly used to identify possible cultural boundaries and exchange networks among Upper Paleolithic human groups. People in Africa, at least in Kenya, were already producing ostrich eggshell beads at least 40,000 years ago (Ambrose 1998). These beads are similar to what the Kalahari San still produce. I was fortunate to spend some time with Ju/'hoansi women in December 2015 and produce a bead necklace for myself.

European Aurignacian beads were made from a variety of materials including bone, ivory, steatite and from marine, freshwater and fossil shells. Fox canines were especially preferred for beads in Paleolithic France, Germany and Russia. Shell beads were often manufactured from materials exotic to the region. Some shell beads in French sites come from the Atlantic coast, which was up to 250 kilometers from the sites. Shell beads were also excavated from Riwi, a small shelter in the Kimberley of Western Australia. These beads were c. 30,000 years old and the materials were transported from the coast c. 500 kilometers inland (Balme & Morse 2006).

Archaeological finds of the use of red ochre refers to the possibility that Aurignacians had a custom of use of ochre indicating a custom of body painting. However, this custom was highly unlikely to have been the predecessor of two dimensional depictions of parietal art. Body painting can be a form of decoration, but it also has practical purposes and these purposes would also have been easy for Neanderthals to adopt even before the arrival of the modern humans. However, Lewis-Williams believes that modern humans already used body-painting for social and symbolic distinction, which was difficult for the Neanderthals to comprehend.

According to Paul Bahn (1998) body painting is known in a myriad of cultures. There is evidence of the use of ochre in South Africa 800,000 to 900,000 ago. It appears that *H. erectus* carried the use of ochre with them as they moved to Europe c. 250,000 years ago. The Neanderthals also used ochre for some purpose in Europe before modern humans arrived. (Bahn 1998, 71).

The most definite early dating on the modern use of red ochre comes from Pinnacle Point near Mossel Bay in South Africa. The site, known as the PP13B, is a sea

cave overlooking the Indian Ocean in the quartzitic coastal cliffs. Curtis Marean and his team (Marean, et al. 2007) have found evidence of 164,000 year old modern human habitation indicated by their use of shellfish, bladelets, and ochre. Marean has associated the ochre his team has discovered with body-painting and perhaps the coloring of other organic surfaces. (Marean, et al. 2007).

But was this ochre used for body decoration or for something completely different? Bahn produces several options from international ethnographic evidence. Ochre can be used for treating animal skins, or for preserving organic tissues by protecting them from putrefaction and insects. The red pigment could also be used for preserving dead bodies and for neutralization of the foul stench the corpses excrete. (Bahn 1998, 71–72).

During the Pleistocene, people would also have appreciated the effect the red pigment has on natural elements and insects. When the ochre is applied as a body paint, it has an ability to maintain body heat and ward off the effects of cold and rain, but it can also be used with fat as a hygienic measure to protect the skin against the sun and dry winds. It also works as a mosquito repellent, and the body paint can effectively insulate against heat and cold. It can also suppress body odors which is very essential while hunting (Bahn 1998, 72). According to archaeologist Philip Nigst (2014), the most well known Venus figure discovered at Willendorf II in 1908 was originally covered with red ochre, most of which was accidentally removed when it was washed (Nigst 2014, 7832).

We cannot know what purpose the red ochre served for the most ancient humans. It may have been used for very practical and mundane reasons, but it could also have been used for decorative purposes. Material decorations and body painting might refer to expanding human social groups, or more complex social customs, in which a more defined group identification was necessary (Dunbar 1992, Wynn, Coolidge & Bright, 2009). Necklaces and other decorations were also common gifts among the Kalahari San (Marshall Thomas 2006, 220–223; Katz 1982, 24–25; Silberbauer 1981, 238–242). This gift giving activity was known among the Ju/'hoansi as 'xaro' (also spelled as hxaro).

The *xaro* gifts were used to strengthen and maintain social relationships. Any precious and possibly even coveted artifact was quickly given away as *xaro*, so as not to cause any jealousy, which would in turn jeopardize the delicate social structure. *Xaro* partnerships could last for a lifetime. A person would give a gift and time might pass and the other person would give a gift in return. The *xaro* items were carefully planned. Although they could have been anything they could have made using the natural resources, they were often something more fancier. The *xaro* gifts were often valuable things that had to be traded, such as metal knives, or laborious items such as ostrich eggshell necklaces, bead belts and beaded head bands. But occasionally these *xaro* partnerships were terminated when the imbalance between the gifts that were given and received continued for too long. Giving something which was nice, difficult to produce, took a lot of time, or was expensive to trade, was a very distinctive quality among the recent hunter-gatherers. It reduced jealousy and ensured reciprocal generosity among the small social groups.



Fig. 26. Statuette of the Lion Man after completion of the new restoration in 2013.
 Height of the figure is 31.1 cm. Hohlenstein Stadel Cave. Aurignacian.
 © Ulmer Museum / Landesamt für Denkmalpflege Baden-Württemberg;
 Photographs by Yvonne Mühleis.

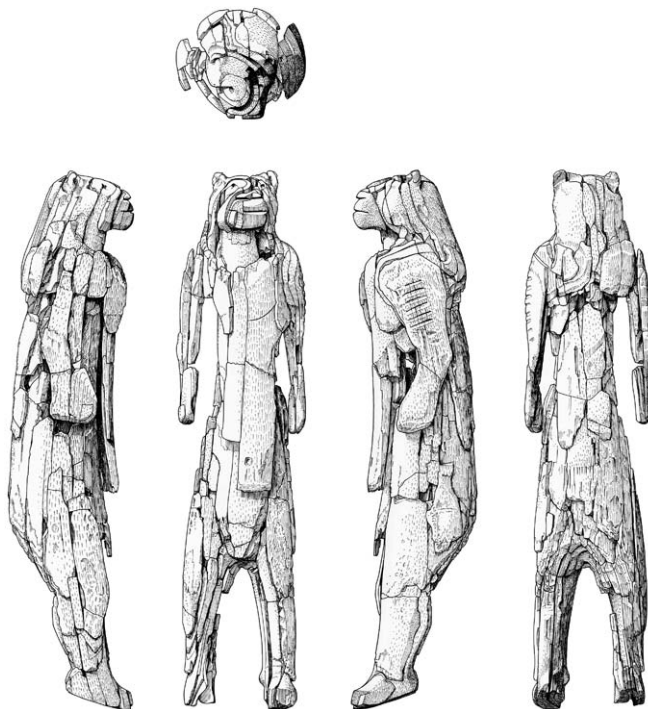


Fig. 27. Drawing of the Lion Man statuette after the completion of restoration in 2013.
 Height of the figure is 31.1 cm. Hohlenstein Stadel Cave. Aurignacian.
 © Ulmer Museum / Landesamt für Denkmalpflege Baden-Württemberg;
 Drawing by Christina von Elm.

◆ EARLIEST EXAMPLES FROM EUROPE

The cultural and social behavior of Upper Paleolithic humans existed right from the beginning of the Upper Paleolithic although some features may have been enhanced through time. The earliest *H. sapiens* culture of Upper Paleolithic was the Aurignacian, which lived c. 45,000 to 27,000 years ago in Europe.

The recent datings performed on the Lion Man figurine found from the Stadel Cave on the Hohlenstein in the Lone Valley in southwestern Germany have pushed the origins of this figurine even further into the past. German archaeologist Claus-Joachim Kind from the State Office for Cultural Heritage Baden-Wuerttemberg in Stuttgart and his colleagues (Kind, et al. 2014) have suggested that the Lion Man is c. 39,000 to 41,000 years old. This would make the figurine the oldest example of representational art ever found and dated. The earliest dated examples of cave paintings in Europe comes from the Chauvet Cave in southwestern France and from the Fumane Shelter near Verona, Italy, with both dating back some 35,000 years.

The spectacular Chauvet Cave was found accidentally in 1994 by a group of three speleologists, Eliette Brunel-Deschamps, Christian Hillaire, and Jean-Marie Chauvet for whom it was named for (Chauvet, et al. 1996). Brunel-Deschamps, Hillaire and Chauvet were very professional in their actions and they informed the local authorities almost immediately and the cave was examined and sealed by archaeologist Jean Clottes soon after. The cave has never been open to public and only a small number of professionals have been permitted access to it. The paintings in Chauvet Cave turned out to be much older than any of the previously found examples. The radiocarbon dating and comparable research done on cave bear bones found in the cave, date the images to c. 37,000 years ago (Pike, et al. 2012).

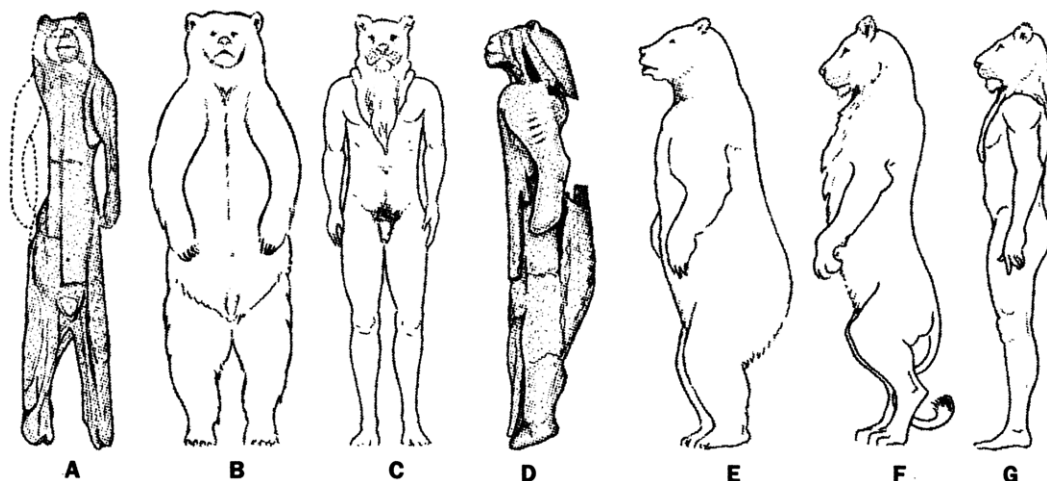


Fig. 28. R. Dale Guthrie asks if the Lion Man really a man with a lions head, or a bear or a lion standing on its hind legs? Drawing by R. Dale Guthrie (2005, 446).

The Fumane cave has been analyzed because many of its finds date back to the times before modern humans arrived to the area. The stone tablets, with one of them bearing an image of a therianthrope (half-animal and a half-human) were uncovered in 1999 during excavations by an Italian team. The rock piece bearing this painting had possibly fallen from the cave roof and become embedded in floor sediments previously dated to between 32,000 and 36,500 years ago (Balter 2000). The paintings of the Chauvet and Fumane cave were made by the Aurignacians. Previously prehistorians had only attributed portable art for the Aurignacians.

One of the most significant Aurignacian specimens is the Lion Man of the Hohlenstein Stadel (Figs. 26–28). The statuette pieces were found by German anatomist Robert Wetzel and geologist Otto Völzing from the Stadel Cave on the Hohlenstein in the Lone Valley in southwestern Germany in 1939 just before the outbreak of war. The pieces were not placed together before 1969, when archaeologist Joachim Hahn in Ulm, Germany began to work on them. The discovery and restoration on further fragments of the head revealed it really represented a lion and the sculpture became known as der Löwenmensch (the lion person). Recent excavations on the site has confirmed that the Lion man might be about 39,000 to 41,000 years old. It is a therianthrope figure with lion's head and human body and it is carved from Mammoth tusk. (Kind, et al. 2014; Cook 2013, 29–30).

Dale Guthrie (2005) claims that it is not always easy to identify Paleolithic images, which might have been made with mystical purposes on mind. Guthrie claims that is difficult to tell whether the Lion Man is a half-lion and half-human (Fig. 28). It could also depict a standing lion or even a standing bear (Guthrie 2005, 446).

◆ EARLIEST EXAMPLES OUTSIDE EUROPE

German archaeologist Wolfgang Erich Wendt has found the oldest dated evidence of a rock painting in Africa. The Apollo 11 Cave is situated in the Huns Mountains in south-western Namibia (Wendt 1976, 8). During his stratigraphic excavations from 1968 to 1970 Wendt found stone plates with painted images. When the pieces were put together, two of them fitted together to form a single image (Fig. 52). The painting depicts a half-animal and half-human figure, a therianthrope, with feline features but with human legs and gemsbok (*oryx gazella*) horns. The stratigraphic position of the tablets suggests that it is c. 27,500 years old (Wendt 1976, 6–7), which makes it the oldest example of figurative art ever found in Africa.

The archaeological evidence from Australia suggests that some kind of ochre crayons were used for some purposes around 50,000 years ago (David, et al. 2013; Roberts, Jones & Smith 1990). The most intriguing recent dated evidence comes from the Sulawesi island in Indonesia. The hand stencils in Leang Timpuseng cave are about 40,000 years old and one of the figurative paintings (Fig. 25) is at least 35,400 years old (Aubert et al. 2014, 223–225).

This evidence suggests that modern humans might have left Africa with the image making culture disseminating it wherever they settled. From this perspective, the Upper Paleolithic “Creative Explosion” might not be such a revolutionary event

from the image-making perspective. The modern behavior and modern culture of *H. sapiens* evolved gradually in Africa. One innovation was slowly followed by another. The Middle to Upper Paleolithic transition that took place in Europe was unique, because the migration of *H. sapiens* from Africa and Middle East happened to end in Europe and because of it, many aspects of human cultural behavior began to flourish, or at least it appears so. It is from this perspective, Lewis-Williams claims, that there was an apparent change of symbolic behavior in Upper Paleolithic Europe. However, the evidence of this explosion is not global. According to Lewis-Williams the view that various art forms and fully developed cultural behavior suddenly appeared in Western Europe could be titled a Creative Illusion (Lewis-Williams 2002a, 99).

The modern human mind and modern behavior evolved in Africa and when *H. sapiens* finally arrived in the Western European cul-de-sac during the Upper Paleolithic, it was highly modern and capable of the things that finally enabled the modern human to establish itself globally as the dominant species. Lewis-Williams claims the reason behind this change is not physical development, but rather it is a change in social behavior (Lewis-Williams 2002a, 99).

The Upper Paleolithic cultural change was very powerful. What is peculiar about the transition from the Middle to Upper Paleolithic is that before the Upper Paleolithic it feels as if nothing ever changed. Middle Paleolithic sites from France, Israel and Ethiopia are all basically the same whether they are 200,000 or 60,000 thousand years old. But c. 50,000 years ago when the Upper Paleolithic began, an endless amount of distinct cultures with modern innovations began to emerge. And these changes and this cultural evolution is still effective. (Lieberman 2013, 136).

The modern behavior of the first modern humans to live in Upper Paleolithic Europe was a result of the long evolutionary process that happened in Africa and in the Middle East. But something peculiar happened when they arrived in the European *cul-de-sac*. Lewis-Williams claims that a few features have created an illusion of a “*package deal*” of symbolic behavior. The first of these is the enhanced stone tool technology, which went beyond practicality reflecting complex group identity. The second is, body decoration, possibly reflecting group identity, but also individual status. The third is, elaborate funeral ceremonies for chosen individuals. The fourth feature is the modern language, and the fifth is visual culture with representational objects and representational two-dimensional images. (Lewis-Williams 2002a, 101).

But visual culture was probably something they brought with them. This idea is supported by the examples found outside Europe, from Namibia and Indonesia, which are almost equally ancient.

13. The Motifs of Paleolithic Rock Art

Upper Paleolithic image-production was not individually constructed, but rather a socially constructed activity. It cannot be made or understood individually. If the people who participate in the image-production (or consumption) find the images and objects meaningful the image production and consumption transforms into an important element of their social activity. Then it becomes important and they expend more effort executing and improving it. This chapter also recounts some of the things depicted in rock art and chronicles how other scholars interpret its meaning.

Lewis-Williams (2002a, 44) suggests that the Upper Paleolithic image-production was a socially constructed activity. It served some important social necessity, although it could have been produced by individuals, it still served a distinct social purpose, and it happened within a social context. Therefore, according to Lewis-Williams, prehistoric imagery cannot be understood outside its social context.

According to Lewis-Williams, a prehistoric artist would not depict an animal without considering the symbolic associations of this particular animal. The symbolic associations of images are socially constructed and maintained. Even the modern Western humans attach symbolic connotations to animals: lions represent royal and noble qualities and sheep represents innocence and kindness. These are shared associations which cannot be changed on an individual level. Humans in Upper Paleolithic possibly incorporated similar socially-shared associative connotations in their images. (Lewis-Williams 2002a, 44).

Personally, I have a tremendous respect towards a late American ultrarunner Micah True who established a running event among the native Ráramuri runners of the Northern Mexico and invited international runners to participate (McDougall 2009). He more widely known as Caballo Blanco, the White Horse. I have a poster of his race from 2015 on my wall and as I am looking at the white horse depicted on the poster, I am thinking of Micah True. This connection between the White Horse and Micah True is not widely shared and although I hope his legacy would endure, I acknowledge the fact that it might not last hundreds of generations.

Every modern society has socially shared and accepted associations and meanings. Lewis-Williams believes that the images of animals made by Upper Paleolithic people were not just images of animals. He feels it is most unlikely that human bands living far apart would depict horses and bison if the animals did not represent some non-trivial socially shared meaning to these people. The small number of species depicted in Upper Paleolithic art refers to some social behavior. That is why Lewis-Williams believes that the activity of Upper Paleolithic artists was constricted by rules of customs. (Lewis-Williams 2002a, 44-45).

◆ THE SUBJECTS OF THE IMAGES

The motifs of the parietal art (cave paintings and engravings) include similarities with portable art, but some features are unique to parietal art, which does not depict as wide a range of animal species as the portable objects do. Lewis-Williams (2002a, 29) has listed the most the most typical categories of parietal art:

1. **Animals.** Images often depict real life creatures like bison, horses, aurochs, woolly mammoth, deer and felines.
2. **Therianthropes.** In some cases anthropomorphic and shape-shifted figures appear, which may or may not depict humans. Researchers have suggested that these therianthrope (part human part animal) figures depict masked people executing rituals, but Lewis-Williams claims that closer inspection reveals that the figures have merged human-animal features, having a human body with an animal head. Realistic human depictions and therianthropes are rare in Paleolithic rock art, but common in Southern African rock art. Therianthropes will be discussed more closely in Chapter 15.
3. **Handprints.** This image category is distinctive because of its execution. The handprints can be positive or negative, whether they are painted with a paint-soaked hand or by pressing a clean hand on the rock face and using it as a stencil by spraying the paint over the hand leaving the shadow image of a hand on the wall.
4. **Signs.** Several different kinds of signs are depicted, including geometric shapes such as grids, dots and chevrons.

French prehistorian André Leroi-Gourhan (1968) is famous of his exact quantitative analyses and meticulous categorizations on Upper Paleolithic art. He also had an idea that the structural composition of certain symbols and juxtaposition of certain species was meaningful. His lists of the animals depicted in prehistoric caves in Central Europe have been most valuable information for all rock art scholars. This particular list by Leroi-Gourhan is based on the evidence from 72 prehistoric caves of about one hundred which were known during the survey. According to Leroi-Gourhan, this should serve as the bulk of cave art for all practical purposes.

The animals were not depicted randomly within the caves, but followed a certain pattern. The centrally located compositions in the caves contained 91% of all the painted bison, 92% of all the aurochs, 86% of all the horses, and 58% of all the mammoths. The very ends of the caves usually contained more dangerous animals, for example 44% of all the lions. (Leroi-Gourhan 1968, 506).

ACCORDING TO LEROI-GOURHAN (1968, 502) the depicted animals in these 72 caves include:

Horse	610	Hind	135	Feline/Lion	29
Bison	510	Stag	112	Woman	18
Mammoth	205	Man	84	Rhinoceros	16
Ibex	176	Reindeer	84	Fish	8
Auroch/ox	137	Bear	36		

◆ PAIRING OF ANIMALS AND GENITALIA

Leroi-Gourhan noticed that in Lascaux the most important section of each panel was occupied by aurochs and horses. At Pech Merle, another important Upper Paleolithic parietal art site in Central France about 100 kilometers southeast of Lascaux, he noticed similar pairings of bison/horse and bison/mammoth. Noticing these pairings, Leroi-Gourhan began making a systematical statistical tabulations of similar pairings in parietal art. The central figure in cave art appeared to be a herbivore, and most often it was a bison, but there are also examples of aurochs and in rare cases it was a hind. This central animal was also associated with the horse. In 2151 figures there was 659 cases of these pairings. (Leroi-Gourhan 1968, 118–119).

One of the key ideas that Leroi-Gourhan introduced was the division of the animals into representations of sex. The sex of the animals is very hard to define in most of the cases. Depictions of humans are also very rare. However, Leroi-Gourhan categorized more abstract symbols that he divided into male and female signs. One very interesting category is the depictions of men. They are often depicted as vanquished (Leroi-Gourhan 1968, 130).

He speculated that the concept of Male was represented by a horse, ibex, stag, reindeer and hind, and the concept of Female was depicted by images of aurochs and bison. These animals were often also depicted with corresponding signs or symbols. According to Leroi-Gourhan (1968, 144–146), rectangles, lattice-shapes, tectiforms, ovals, clariforms and brace-shapes were all female signs with most of them reminding Leroi-Gourhan of possible abstractions of the vulva. The signs that depicted barbed shapes, short strokes and dots were male-signs (Leroi-Gourhan 1968, 146–147).

But how do we really know these signs represent these meanings? The many signs that are classified as ‘vulvas’ might actually depict something completely different. The same problem applies to many of these abstract signs. The obsession with female genitalia in Paleolithic art was ignited by Abbé Henri Breuil in 1911 when Louis Didon enquired about a engraving he found in Abri Blanchard in Dordogne, France. Breuil interpreted the designs as ‘*Pudendum muliebre*’, meaning the female genitalia. Breuil was convinced that male and female symbols trace their origin back to these prehistoric engravings, but are also evident in Egyptian symbology (Hosking 2013, 195).

According to Paul Bahn (1998), exact representations of female genitalia are extremely hard to find in Upper Paleolithic art. Only few examples are attached to female bodies and therefore could be counted as real vulvas. Other vulvas are more or less ambiguous motifs without any context. Scholars of prehistory have interpreted these motifs as: incomplete vulvas, squared vulvas, broken double vulvas, circular vulvas, relief vulvas, and even trouser vulvas. Bahn notices that many of these motifs look like hoof prints or bird-foot prints, and he suggests that prehistoric image makers could possibly have been working on several symbolic meanings simultaneously (Bahn 1998, 174).

◆ TRACKING AND UPPER PALEOLITHIC ART

South African anthropologist Louis Liebenberg has used his insights into tracking also to explain features in prehistoric European Upper Paleolithic rock art with. Liebenberg claims that Upper Paleolithic rock art contained useful information, which was necessary for human everyday lives. This would also follow the idea that a elaborate storytelling tradition is a very important medium for passing on crucial knowledge in hunter-gatherer communities before written language. (Liebenberg 2013, 189).

Liebenberg (2013; 1990) claims he has identified one Magdalenian (17,000 to 11,000 year old) cave painting depicting bell-shaped figures in reddish brown paint in El Castillo cave in northern Spain. This cave was discovered in 1903 by Hermilio Alcalde del Río and it was first brought into public knowledge by Abbé Breuil when he published (together with Alcalde del Río and père Lorenzo Sierra) a book titled “*Les cavernes de la région cantabrique*” in 1912. Leroi-Gourhan (1968) was certain that this shape belonged in the category of his female signs. According to Leroi-Gourhan (1968, 144–145; 334; color photograph no. 63) these particular bell-shapes are very typical and realistic representations of vulvas. However, as an experienced tracker, Liebenberg immediately recognizes these figures resemble ungulate hoof prints in soft substrate. Liebenberg writes:

“The points at the back of the footprints reproduce the impression created by the dew claws when the animal’s feet sink into soft mud or snow. The forefeet are usually larger than the hind feet, and in soft substrate the forefeet appear also more splayed than the hind. The lines down the middle of the middle and lower right footprints may indicate that they are more splayed than the other two. If this is so, the middle footprint would represent that of the left forefoot, and the lower right footprint that of the right forefoot.” (Liebenberg 1990, 41; 2013, 190).

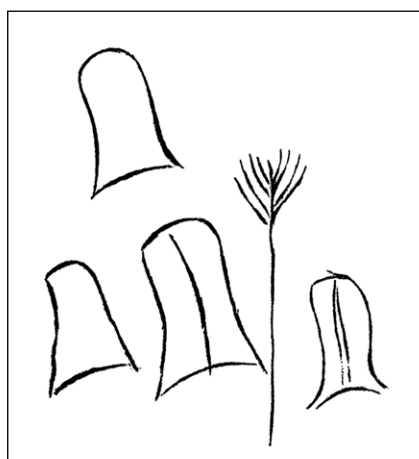


Fig. 29. Copies of the Bell-shaped figures El Castillo Cave, Spain. (from Liebenberg 2013, 192).

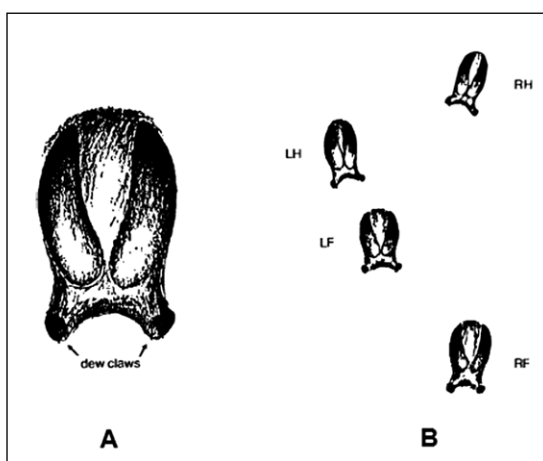


Fig. 30. (A) Hoof print in soft substrate (B) Jumping gait (from Liebenberg 2013, 193).

Liebenberg continues describing that this particular track group might be that of a jumping animal. He notes that this sort of sequence is extremely exhausting for a large animal and it is rarely used on solid ground. Liebenberg suggests that this animal has moved on soft substrate, probably on mud or snow. Liebenberg (2013) writes:

“The points at the back of the footprints reproduce the impression created by the dew claws when the animal’s feet sink into soft mud or snow. The forefeet are usually larger than the hind feet, and in soft substrate the forefeet appear also more splayed than the hind. The lines down the middle of the middle and lower right footprints may indicate that they are more splayed than the other two. If this is so, the middle footprint would represent that of the left forefoot, and the lower right footprint that of the right forefoot. The extreme left footprint would then represent that of the left hind foot, and the uppermost footprint that of the right hind foot. Taken as a whole this track group closely resembles that of a jumping animal.” (Liebenberg 2013, 191–192).

Liebenberg suggests this group of figures symbolizes a meaningful interpretation of spoor. The group of tracking hunters may have driven the animals into soft mud to exhaust them. This interpretation suggests that these symbols on the cave wall are not meaningless figures; these symbols depict a dance of death of a hunted animal. (Liebenberg 1990, 41–42; 2013, 191–192).

◆ USING ETHNOGRAPHIC EVIDENCE TO EXPLAIN PALEOLITHIC ART

According to Lewis-Williams, present-day hunter-gathers are closest to Upper Paleolithic people. However, they are not living fossils of the past, but humans like us with a long history and cultural evolution behind them. Lewis-Williams reminds us that some specific features in some present-day hunter-gatherers might be similar to Upper Paleolithic behavior, but the equation remains; which features are similar and which ones are culture-specific? (Lewis-Williams 2002a, 46).

One of the most significant finds in Australian ethnography was totemism, which as a concept in present-day form it is difficult to define. The word *totem* itself is derived from the North American Indian Ojibwa word that means animal, but it can also sometimes refer to a plant that functions as an emblem to the clan. The Ojibwas might refer to the Eagle-people and Bear-people, based on their clan totem. Similar belief systems have also been found in Australia. Some Upper Paleolithic scholars were really excited by this new concept and soon declared that the animals in Parietal art are totem animals. However, this theory has its problems and for Lewis-Williams it seems very unlikely. He claims that for this theory to be true there should be images of one animal in one cave, and images of another animal in another cave. (Lewis-Williams 2002a, 46).

Salomon Reinach also referred to another theory. The Australian Arunta aborigines painted images of a specific animal with a belief that images would magically cause the animals to procreate. Reinach suggested it could also be true with Upper Paleolithic parietal imagery. Later Abbé Breuil and many others used this hy-

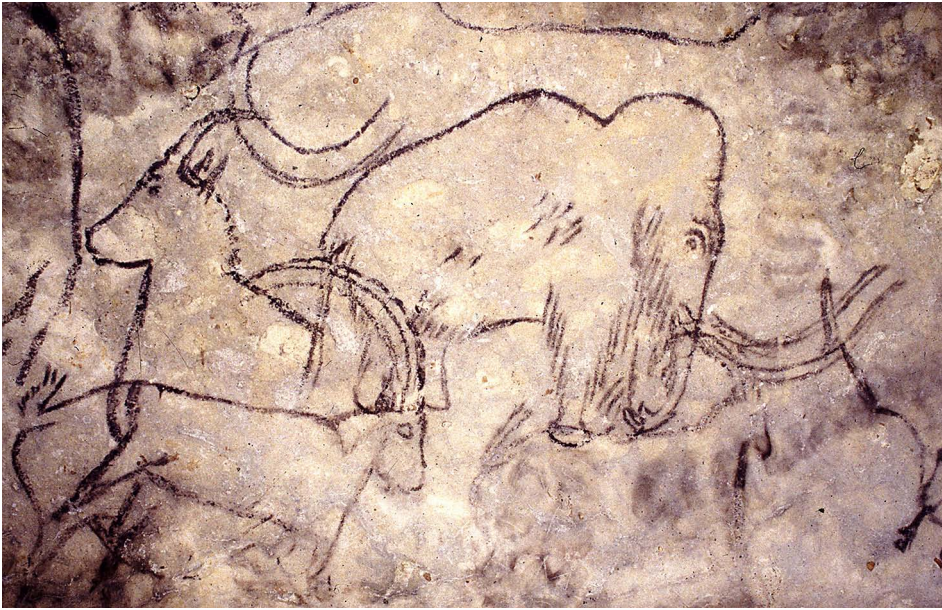


Fig. 31. Detail of the Grand Plafond. c. 13,000 years old.
Rouffignac Cave in Dordogne, France.
Copyright Grotte de Rouffignac

pothosis to shape their theory of hunting magic. Breuil and others suggested that the images were believed to give magical power to hunters to rule their prey. Breuil thought that for this reason many animals depicted in the caves had spears sticking into their body. Some animals indeed have been portrayed with spears and other projectiles stuck into them. However, Lewis-Williams reminds us that in only 15 per cent of all the known Upper Paleolithic images depicting a bison, the animal seems to be hurt or dying. In most of the imagery the animals are indeed very much alive. (Lewis-Williams 2002a, 47).

◆ THE NATURALISTIC APPROACH

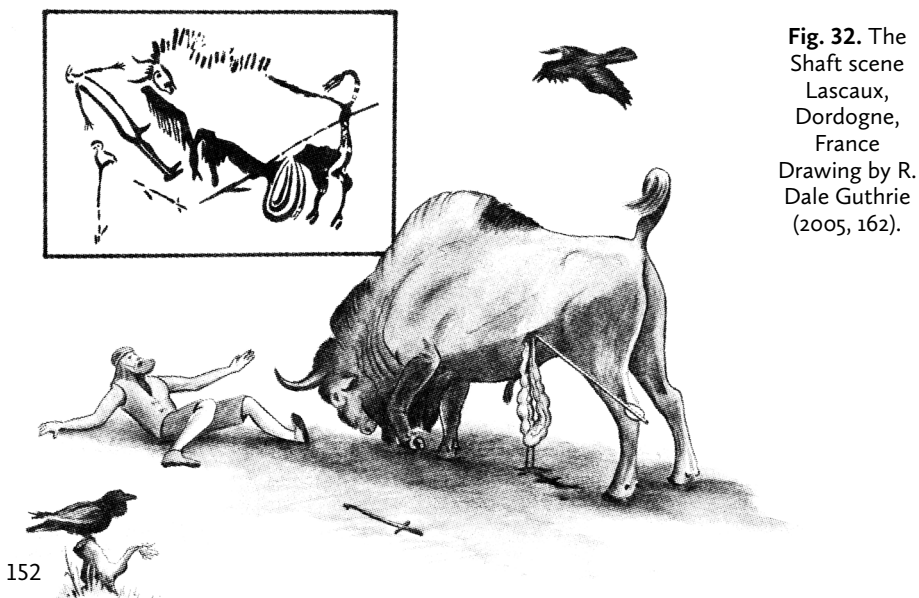
R. Dale Guthrie (2005) is one of the few scholars who have studied prehistoric art from the perspectives of an artist and a hunter. His ability to recognize sketches and 'artistic' mediocrity is quite impressive. As it appears to be for Guthrie, for myself as an artist, the general attitude towards the '*superior artistic ability of the prehistoric artists*' has always seemed a bit dubious. With artistic ability, I mean the technical image-making skills such as material use and visual problem solving, including the rendering of anatomical features and proportions. The Upper Paleolithic artists were often masters at all of these qualities. There is an upside-down horse depicted in the end of the Axial Gallery of the Lascaux Cave. At the end of this gallery the ceiling becomes lower. At the foot of the left wall a fissure has caused the lower level to detach, giving the name '*false pillar*' for this formation. The '*Upside-down Horse*' is wrapped around the false pillar. Although the image is painted on this very peculiar manner on this extremely difficult "canvas" it reveals accurate

anatomical proportions and expression of weightlessness and vitality. This sort of technical ability takes a very long training to achieve.

But not all Upper Paleolithic rock art show such mastering of the medium. I was especially startled by the crummy anatomical renderings of some of the animal paintings in the last galleries known as the 'Grand Plafond' gallery in the Rouffignac Cave in Dordogne (Figure 61), France. Some paintings and engravings in this very deep cave are executed with amazing skill, but not all of them like the Ibex figure in the Grand Plafond. Guthrie's massive study (2005) is a great example of a rigorous scrutiny of the images engraved and painted in caves, on rock shelters and tools and small objects. Only a scholar with the ability to understand visual abilities and with the perspective of a hunter and paleobiologist could have made this book.

According to Dale Guthrie (2005), the small percentage of dying animals is more than sufficient to prove that the Cro-Magnons did in fact hunt these animals. He gives a very intriguing example. Atlatls (spear-throwers) used by the Ice Age hunters were often adorned with images of animals they hunted. There is a very clear parallel between historical and more recent hunting weapons, which are often adorned with images of animals. There are plenty of contemporary examples of guns with images of bears and pheasants engraved upon them. These animals are usually not dying or wounded. They are often depicted as being alive and bursting with vitality and grandeur. (Guthrie 2005, 289).

Abbé Breuil's hunting magic theory seemed very convincing at first. It appeared to explain why so many Upper Paleolithic images had been executed underground, since magic was often kept secret. Also, the depicted animals seemed like logical game for Upper Paleolithic people. However, when images of felines and images of other similar predators that people certainly would not have wanted to cause to increase in number, started to appear, Abbé Breuil had an answer ready. Breuil speculated that Upper Paleolithic humans wanted to magically acquire the hunting powers and the strength the predators possessed by depicting them. The elasticity of Breuil's theory did not end here. When the quadrangular symbols of Lascaux ap-



peared, Breuil noted that they depicted animal traps or hunters's hides, or the dwellings of spirits. Lewis-Williams admits that some Breuil's explanations might be true and we should all consider the good and bad aspects of this comfortable hunting magic theory before we permanently discard it. Admittedly hunting certainly played a central role in Upper Paleolithic society. (Lewis-Williams 2002a, 47-48).

◆ ATLATL

The Cro-Magnons most likely hunted with close range (25 meters) atlatls (spear-throwers) to deliver a long dart causing deep, lethal wounds that resulted in heavy bleeding in the game they hunted. According to Dale Guthrie, an atlatl dart shot right into the animal's lungs would have caused bleeding via its nose and mouth, which is often depicted in ancient and more recent rock art (Guthrie 2005, 446). Occasional gut-hits would have caused guts spewing out of the wound, as is depicted in the Shaft panel in Lascaux (Fig. 32)(Guthrie 2005, 162). The Atlatl, or a spear-thrower, uses a long, lightweight, flexible fletched darts, reminding of a large arrow rather than a spear (Guthrie 2005, 286-287). Therefore I am much more confident using the Uto-Aztec word atlatl rather than the term spear-thrower, which suggests that the thrown object was a rigid, javelin-like object.

My own experiments have shown that it probably takes years of practice and hands-on mentoring to produce functioning and lethal atlatl darts. It has to have just the right length, weight, flexibility, balance, and perfect fletchings, not to mention the stone or antler tip, which are even more difficult to make on stone tools. If any of these elements would fail, the dart would not fly with deadly accuracy and force, nor inflict deadly hemorrhages. Lightweight darts are faster and require less strength, but they are usually non-durable, which is also an important feature of a serious hunting tool.

DALE GUTHRIE (2005, 240) refers to Leroi-Gourhan citing that only 15% of the depicted animals are shown speared or bleeding. These images occur in cave engravings and paintings, and on tools, stone tablets, and bone scraps. These images penetrate the whole visual culture created by the people living in Europe during the Pleistocene. The hunters used weapons, which penetrated deeply into the animal's thorax, killing by hemorrhaging, not by impact trauma, as a bullet does. The thoracic region of a large animal is highly vascularized. When a projectile slices through these tissues, blood vessels, and internal organs, it results in massive loss of blood, making the animal weak, dizzy and causes its death, sometimes in minutes. The same animals that are portrayed with lethal hits are also shown with nose bleeds and occasionally shown urinating and defecating, which also is a common response to a lethal hit. If it is possible that nasal bleeds occurred on the hunted animals, we might suppose that not all bleeding noses depicted in rock art necessary indicate shamanic practices.

Before we continue, we must keep in mind that the people who made the images during the Pleistocene were all hunters. The idea that these images might depict animals they hunted is still very convincing and it should never be thoroughly rejected.

14. The Rock Art Cosmology

This chapter goes further in the possible shamanic explanations of rock art, introducing how South African scholars, including Harald Pager (1971), Patricia Vinnicombe (1976) and David Lewis-Williams confronted the old hunting magic theories and began re-researching the cultural traditions of the ancient local San people. Some features, which appear in Southern African rock art, obviously depict shamanic experiences. These features include 'the threads of light', likened to ladders or ropes which are used in trance hallucinations to climb up to the 'realms of the gods' in the heavens. Magical creatures, such as gigantic serpents, are also very common in shamanic hallucinations all over the world including Australia and the South American Amazonia. I have also recognized these features in a very rare cave painting in Erongo region in Namibia. This previously very little studied cave is quite unusual compared to many other rock art sites in Namibia, but has plenty of similarities with South African rock art. This chapter goes back to Lewis-Williams's and Dowson's (1988) idea of the possible 'neurological bridge' once more, because I make a claim that this 'bridge' only seems to apply to some abstract features of Paleolithic rock art, and many important universal features such as trans-cosmological travel through 'the threads of light' and supernatural serpents are missing from the Upper Paleolithic parietal art.

The colonial attitude towards the San culture still prevailed in the first half of the twentieth century. Scholars mostly agreed that the San rock paintings and engravings were just simple depictions of simple people. Breuil and other scholars ignored the research done among the Ju/'hoansi of the Kalahari and the massive research on culture and art of the /Xam people conducted by Bleek and Lloyd, although Bleek had concluded already in the 1870s that San rock art was "*a truly artistic expression of the ideas that most deeply moved the Bushman mind, and filled it with religious feelings*". Bleek's bold ideas challenged the colonial ideology that the San could not have had a religion. The European colonial presumption was that the San were mentally incapable of understanding their own conception of a Christian god. According to the colonists, the San were treacherous and primitive people, that lacked human sensitivity and furthermore, they lacked the capability for spiritual experience. (Lewis-Williams 2002a, 143).

The shift in colonial paradigm happened after the 1960s in the apartheid-era South Africa when South African scholars, including Harald Pager (1971), Patricia Vinnicombe (1976) and Lewis-Williams confronted the hunting magic theory which was usually attributed to Southern African rock art and began researching the cultural traditions of the San people.

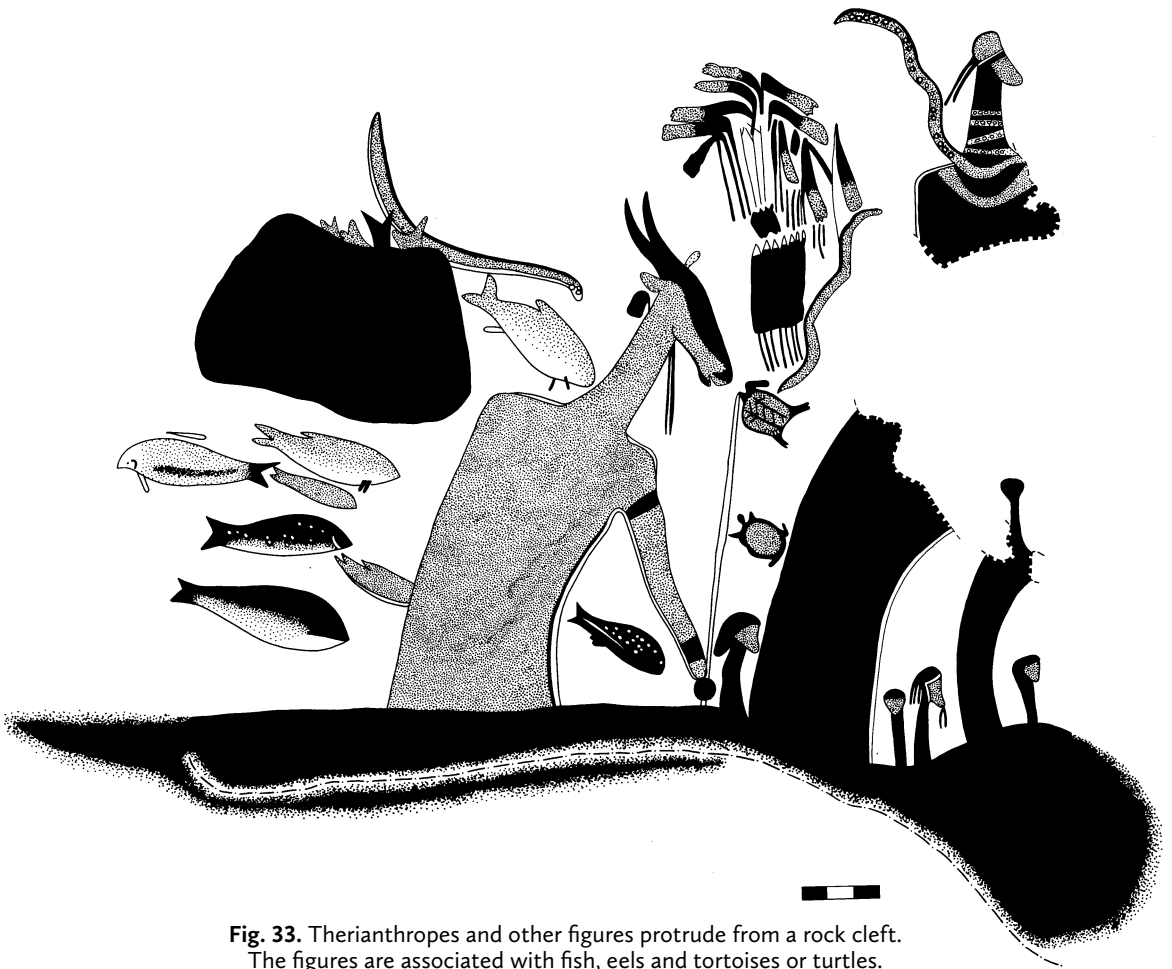


Fig. 33. Therianthropes and other figures protrude from a rock cleft. The figures are associated with fish, eels and tortoises or turtles. Location: Lady Grey district, Eastern Cape, South Africa. Redrawn by Thomas Dowson. Copyright Rock Art Research Institute

The religion of the southern African San, not just the extinct /Xam, but also the contemporary San, is based on the notion of a tiered cosmos similar to many other shamanic religions. The San believe that there is a world above the daily world and another one underground. This tiered cosmology is apparent in most religions, not just shamanic religions. According to Lewis-Williams, this belief can be traced to the conclusions of extensive laboratory tests on mental activities, but it is also evident on worldwide anthropological studies on shamanic cultures.

According to Lewis-Williams, the experiences can be categorized into 1) Experiences that take place underground and underwater including the vortex and 2) Experiences that take place in the sky. Both of these experiences are products of the human nervous system. The experiences are universal, but the contextual appearances vary to some extent. Some speak of crawling into a cave, and the others follow the tree roots, dive into the ocean or a pool (Lewis-Williams & Dowson 1990, 9-10). The sensations of underground travel gains conceptual appearance in the material world and a metaphorical journey starts to sound like a real adventure to an alternative reality. According to Lewis-Williams, “An ‘introcosm’ is projected onto the material world to create a cosmology” (Lewis-Williams 2002a, 144-146).

Lewis-Williams, states that the experiences of flying also have a neural basis. Experiences of weightlessness and rising higher are very common sensations in altered states. These experiences have universally been attached to flying. The San people are no exception to other shamanic people. They also have depicted subterranean and underwater realms in their rock paintings, but also heavenly spirit realms above. (Lewis-Williams 2002a, 147–148).

Lewis-Williams presents an example image (Fig. 18) from the Lady Grey district, Eastern Cape, South Africa (Lewis-Williams 1990, 8; 1999, 88–89; Lewis-Williams 2002a, 148; 2002c, 100; 156; 2003b, 52.), which depicts a large creature with an eland head and other creatures who all emerge from a crevice in the rock. There are seven figures that emerge from this fissure, of which the best preserved figure on the left has an distinctive eland head.

The four smaller figures only have their heads and necks visible, their bodies disappearing into the rock. One of the figures is depicted with bleeding nose. There is a group of at least ten fly whisks next to the figure with elands head. According to Lewis-Williams, ten fly whisks is much more than one would have encountered in a normal San community. Around the therianthrope figure with eland head there are eight fishes, two eels, and two sea turtles. The figures rise to the underwater realm from inside the rock, simultaneously depicting the experience of being underground and being surrounded by underwater creatures. (Lewis-Williams 2002a, 148).

◆ THE THREADS OF LIGHT

The panel also has something Lewis-Williams has called ‘threads of light’ on the right hand side of the composition (this element is not visible in this reproduction). These threads are often painted with thin red lines decorated with white, and they appear to merge into the rock face and back. Anthropologist Megan Bieseles accounts on the threads of light are very famous and often quoted especially in rock art research (e.g. Lewis-Williams & Dowson 1990; Forssman & Gutteridge 2012, 209; Katz, et al. 1997, 106–108; Lewis-Williams & Challis 2011, 79). The San shamans entering deep trance might experience a sensation of traveling to the sky by following, walking, running, climbing, or gliding up a rope, chord or string. Psychologist Richard Katz conducted his field research among the Namibian Ju/’hoansi in 1968. According to Katz, the Ju/’hoan shamans talk about an “*opening*” through which they enter into the inner world of mysteries, and this path is followed to bring healing and knowledge to the community (Katz et al. 1997, 112).

Megan Bieseles (1993) recorded a story told by an old, blind Ju/’hoan shaman known as Kxao Giraffe (in some publications the shaman is referred as Old K”xau). He described a trance (!aia) journey to God’s house in the sky. According to Kxao “*just yesterday, friend, the giraffe came and took me again*”. The giraffe was his animal-helper and source of n/om. Kxao’s journey continued together with trickster deity known as Kaoxa to a wide body of water and a river. They went into the water and Kaoxa made the waters climb up and Kxao found himself flowing along the river experiencing a sensation of two metal plates pressing his sides. The spirits showed



Fig. 34. Outside of the Wüstenquell Cave
Erongo region, Namibia. December 2014.



Fig. 35. Wüstenquell Cave
Erongo region, Namibia. December 2014.



Fig. 36. Wüstenquell Cave Panel
Wüstenquell Cave, Erongo region, Namibia. May 2010.

Kxao how he should dance and they danced. The elaborate story also contains emotional experiences like fear of drowning. Eventually the assigned protector in his journey told him that he would enter the earth. That he would travel through the earth and emerge at another place. When they re-emerged they began to climb “*the thread of the sky*” to the God’s village, where the dead spirits lived and danced with him (Biesele 1993, 70–72; Katz, et al. 1997, 106–108).

Similar altered states experiences have been recorded from the /Xam people in nineteenth century South Africa. According to Lewis-Williams and Dowson (1990) Bleek and Lloyd recorded a myth about /Xam shamans going into a “*waterpit*” where the water was alive to capture !khwa-ka xoro (rain animal), which they killed so that its blood and milk would fall down as rain (Lewis-Williams & Dowson 1990, 11). Water is obviously a very important concept for all humans. We depend on it, but we can also drown if we cannot swim.



Fig. 37. Larger figure on the top dropping people
Wüstenquell Cave, Erongo region, Namibia. December 2014.

Underwater creatures are also a fantastic source for much coveted fat. There are engravings at the /Ui-//aes (Twyfelfontein) depicting seals living on the Namibian coasts made by the ancient hunter-gatherers. Underwater realms also conceal dangerous creatures and these creatures might attack humans and other animals, trying to visit a waterhole or a river for a drink. Water acts as a veil between our world and the world inhabited by water creatures. Before modern mirrors the reflecting surface of the water must have been conceptually powerful. Seeing yourself staring back at you from the watery depths can still be unnerving experience for anyone who has spent extensive periods of time outdoors. The whole concept of underwater journeys is very common among shaman trance experiences from various cultural backgrounds all over the world.

The threads of light are common in South African rock art, but I have also recorded at least one case in Wüstenquell (Figs. 34–41) in Namibia. The site is still fair-



Fig. 38. Serpent going under the bridge
Wüstenquell Cave, Erongo region, Namibia. December 2014.

ly unknown. The current landowner, Oliver Rust, plans to bring archaeologists to study the beautiful cave painting on his farm. In 2011, when I first visited the place, it was still a fairly remote site owned by an old man named Mr. Caspary and the cave had no guidance to it. In the Wüstenquell Cave panel there is a larger character on the top of the rock face. This character appears to drop small people down from the skies. There are also several larger figures with animal features. The largest of these therianthropic figures has a thread of light leaving its face (Fig. 40). The line is painted with white color and the edges of the line are dotted with red.

There is also a small figure on the left who has a thread-like line leaving its head (Fig. 38). This line expands to resemble a serpent with spikes on its back and it continues to slither under a bridge-like object traveling up the rock. When it gets closer to the top giant figure the snake has a monster-like head with a long snout and horns. The panel also has strange circles or egg-shapes that are formed of the small



Fig. 39. Group of Therianthropes
Wüstenquell Cave, Erongo region, Namibia. December 2014.



Fig. 40. Central figure with horns and "threads of light"
Wüstenquell Cave, Erongo region, Namibia. December 2014.



Fig. 41. 'The Golden Snake'
Spitzkoppe, Erongo region, Namibia. December 2014.

people dripping from the sky (Fig. 37). One of these egg-shapes is pushed, carried or rolled by a larger therianthrope figure. The panel also has a large eland with its head facing towards the spectator (Fig. 38). Few other antelopes are depicted with their heads facing us.

The eland and the way it is depicted is very uncommon in Namibian rock paintings, but common in South Africa. The most important animal in Namibian rock paintings appears to be the giraffe, which is not depicted in the Wüstenquell Cave. The paintings in the cave are quite similar to the badly deteriorated paintings in the more popular sites in Spitzkoppe, c. 100 kilometers up north. According to the German rock art scholar Tilman Lenssen-Erz, the Wüstenquell panel has not yet been properly copied (T. Lenssen-Erz, personal communication, June 1. 2015). I believe it should be done before further deterioration of this delicate panel.

◆ SERPENTS

According to Lewis-Williams and Dowson (1990), the walls of the rock shelters are like 'veils' between this world and the supernatural world. The images were brought back from the spirit world and reapplied on the rock face, from which they would re-emerge. Therefore, the rock itself was a meaningful element of the ritual. The rock was also in many cases an important element of the image itself. Paintings frequently appear to enter and leave cracks and steps in the rock face and some images are folded in crevices (Lewis-Williams & Dowson 1990).

Occasionally, the shamans would travel to the other side of this veil following the threads of light, and when coming back they would have revelations of what was happening on the other side (Lewis-Williams 2002a, 149). On some occasions the threads of light emerge from rock crevices. This is interpreted to depict the movement through the rock veil between the spirit world and the physical world (Forssman & Gutteridge 2012, 209).

Serpents are often depicted slithering under rocks and reemerging again from another place. One such panel known as 'The Golden Snake' is in a cave in the Spitzkoppe granite complex in Namibia. The panel depicts a therianthrope figure confronting a magical serpent which has slithered toward the figure through a crack on the rock wall. There is another magical serpent depicted in the Wüstenquell cave about 100 kilometers south from Spitzkoppe. At Wüstenquell a magical serpent exits from the top of a person's head and slithers up and goes under a bridge-like construction (Fig. 41).

According to Patricia Vinnicombe (1976, 229–237), these serpents with ears, tusks or horns are also very common in the Drakensberg. They are sometimes blended together with eland and smaller antelopes. One of the most interesting aspect of these snakes comes from Joseph Orpen's San guide Qing. He insisted that one of the depicted quadruped strange animals depicted in a Sehonghong rock shelter present-day Lesotho was in fact a snake. According to Orpen:

"The men with rhebok's heads ... and the tailed men ... live mostly under water; they tame elands and snakes. That animal which the men are catching is a snake (!) They are holding out charms to it, and catching it with a long riem. ... They are all under water, and those strokes are things growing under water. They are people spoilt by the – dance, because their noses bleed" (Orpen 1874, 10).

◆ BLEEDING NOSES

Apparently the painting did not depict anything without complex connection to the belief, rites and culture of these people. Obviously this panel was riddled with complex meanings and metaphors. According to David Lewis-Williams and Sam Challis (2011, 113–121) this image depicted a rain-making ritual and this whole incident took place during a shamanic trance journey. The nasal bleeds occasionally occur among the San healers when falling into a deep trance.

The ceremonial practices were at least somewhat similar among the mid nineteenth century Maluti San of the southern Africa, who had still recently made rock paintings in the nineteenth century. According to the testimony of the last hunter-gatherer Maluti San named Qing, the men who had transformed into half-animals and had reebok's heads had fallen into a deep trance state, because they were depicted with their noses bleeding (Orpen 1874, 10).

In most ways, the healing ceremonies appear to be rather similar to the ones performed by the Kalahari San. Bleeding noses were also a feature of shamans entering the trance state among the more recent Ju/'hoansi in Dobe in Botswana, but it was not recorded among the Ju/'hoansi of the Nyae Nyae in Namibia (Marshall 1999, 87).

According to Lewis-Williams (2002a; Lewis-Williams & Challis 2011), this feature is often depicted in southern African rock art and therefore could be one of the pieces of evidence used to support his claims about the connections between ceremonial dances and rock art practices. Although the bleeding noses depicted in South African rock art might refer to nasal hemorrhages caused by falling into trance, ac-

cording to R. Dale Guthrie (2005, 446) this might not be the case with all the images of animals depicted with bleeding noses. They could simply depict hunted animals with lung hits from projectiles. This is an especially convincing idea in the Upper Paleolithic art of western Europe, where hunters did not use poisoned arrows, like the Southern African San.

THERE IS NO evidence to support any claims that only shamans made rock art. However, Lewis-Williams is certain that the images were painted to depict visions and transformations experienced in altered states of consciousness. After all, as many as half of the men in the Ju/'hoan community and about one tenth of the women were shamans (Katz 1982, 209). Of course the shamans did not paint in trance, but after they regained their alert consciousness.

According to Lewis-Williams (2002a), the San recreated, or relived, their experiences in supernatural realms in their rock art. The people were able to conceptualize the supernatural tiered cosmos and their own journeys into the spirit world in their images and transform their supernatural experiences into fixed two-dimensional representations that would last into the future. The three dimensional supernatural cosmology, containing underworld, daily reality and the spirit world above, was not just a conceptual idea.

The three-layered cosmology, including supernatural realms, was the reality for the San. The everyday world was only one aspect to it. The images painted from the other worlds were comprehensible, because they were executed onto the 'veils' of the rock walls that functioned as an "*interface between materiality and spirituality*". According to Lewis-Williams, the rock wall is not a *tabula rasa*, but rather an important element of the painting. It supported the conceptuality of the paintings and made them meaningful. The painted walls of the rock shelter transformed into portals that enabled public visits to the supernatural realms (Lewis-Williams 2002a, 149). Finnish archaeologist Antti Lahelma claims that Finnish rock art consists largely of depictions of spirit beings thought to live inside rock cliffs (Lahelma 2008, 59).

◆ UNIVERSAL IMAGERY

The rock art of the southern Africa is mainly located in mountainous rock shelters, on the mountainous escarpment that separates the interior plateau from the coastal lowlands. These shelters occasionally also functioned as living spaces. There are only a few limestone caves in southern Africa, compared to Western Europe, and even these few caves were not used for habitation. The South African rock engravings are often located on the plains of the central plateau. The engravings are often engraved on boulders and on flat rocks on low rises and on rock surfaces along river beds. According to Lewis-Williams (2002a, 151) the engravers in South Africa were much more interested in depicting the geometric patterns and other mental imagery of the early stages of the altered states of consciousness, but this idea does not necessarily apply to Namibian engravings where many of the engravings are depictions of animals and their tracks. Lewis-Williams (2002a, 151) claims, that the hunt-

	ENTOPTIC PHENOMENA		SAN ROCK ART		COSO	PALAEO-LITHIC ART			
	A	B	ENGRAVINGS	PAINTINGS		MOBILE ART		PARIETAL ART	
			C	D		F	G	H	I
I									
II									
III									
IV									
V									
VI									

Fig. 42. Six categories of entoptic phenomena compared with San and Coso rock art depictions, compared with Upper Paleolithic mobile and parietal art depictions. (Lewis-Williams & Dowson 1988, 206–207).

er-gatherers who painted in the rock shelters often depicted the iconic hallucinations and tiered cosmology of the last stages of altered states.

Lewis-Williams claims that rock engravings in South Africa are frequented with similar entoptic patterns that are similar to entoptic imagery induced in laboratory conditions. In some cases the zigzag forms and other patterns form an animal shape. Isolated geometric patterns and integrated entoptic forms are common in rock engravings. Lewis-Williams believes the San tried to interpret the entoptic abstract imagery and merge the neurological visual hallucination with real life experiential imagery (Lewis-Williams 2002a, 151).

These “entoptic patterns” are different from what scholars such as Whitney Davis (1986) have referred to as *marks*. Davis claims that “*continually marking the world will continually increase the probability that marks will be seen as things*” (Davis 1986, 200). The abstract scratchings on the Blombos piece of ochre might be an example of such marks, although these examples were not available when Davis wrote his article. However, Lewis-Williams and Dowson refer to entoptic images, and although they resemble abstract markings, they are in fact *representational images* of mental visions experienced in altered states of consciousness. Visual hallucinations evoked by altered states of consciousness are often very powerful. Some cultures believe that the hallucinatory world is the reality and the waking consciousness is the “altered state”.

The entoptic imagery, which is built into our nervous system and easily induced by sensory deprivation, audio driving, exhaustion, pain, fasting, meditation, psychoactive compounds, migraine or epileptic seizure, is universal to all humans in all times. Lewis-Williams believes that several geometric patterns of southern African



Figs. 43. & 44. Honey foragers running away from a swarm of bees.
Omandumba West, Erongo Region, Namibia. December 2014.

rock art and Upper Paleolithic European rock art are based on entoptic imagery. This view was first introduced by David Lewis-Williams and Thomas Dowson (1988).

To support their claim Lewis-Williams and Dowson (1988) confronts a set of examples (Fig. 42). The first set (From A to B) is a collection of examples of drawings made by Western test subjects under laboratory conditions, who had experienced fortified illusions.

The following sets of images (from C to I) are examples of rock engravings and painting from Southern Africa (C to D), North America (E), and from Paleolithic Western Europe (F to I). Some of these examples show almost identical patterns.

Some images containing navicular patterns in San rock engravings have interpreted to depict honeycombs. However, Lewis-Williams insists that the San seldom depict real world images without any connotations with imagery experienced in altered states. For him, it is more likely that a real world object is depicted through entoptic vision. This view is also supported by some evidence suggesting that entoptic imagery is sometimes combined with an auditory illusion of intense buzzing sound. The present-day Ju/'hoansi of the Kalahari desert, believe that honeybees are God's messengers and they possess significant potency. Honey is a source of important calories for the Ju/'hoansi and there is no reason to believe it would not have been equally important also among the already extinct San groups. (Lewis-Williams, 2002, 153–154).

Harald Rust's farm Omandumba West in the Erongo mountains in Namibia has the most amazing image of a large quiver tree and a small group of honey-robbing foragers being chased away by large swarms of bees protecting their honey (Fig. 43 & 44). The last one of the foragers is totally engulfed by the attacking bees. It is clearly a depiction of a real life event with dreadful consequences.

Navicular entoptic phenomena are very common in San rock art. These shapes are sometimes depicted as a part of an otherwise representational image. In one of Lewis-Williams's examples (Fig. 45) from Harrismith district, Free State province, South Africa (Lewis-Williams 2002a, 155; 2002c, 153) there is a boat-like shape with zigzag shapes on its outer edge. The San painter has depicted a navicular shape, similar to the form commonly reported in Western laboratory experiments. In this painting there are two therianthrope figures emerging from this boat-like



Fig. 45. Navicular shape with two therianthrope figures emerging from it.
Location: Harrismith district, Free State province, South Africa
Copyright Rock Art Research Institute

shape, similarly to the incident that took place in the earlier example in which figures emerged from the rock fissure (Fig. 18). One of these therianthropes is decorated with white dots, with some of them spilling outside the figure. Both figures have several fly-whisks on their backs. Once more there are much more of these fly-whisks than anyone would need in real life. According to Lewis-Williams, disappearance, invisibility and transformation into an animal are all occurrences that are typical to altered states of consciousness when the mind is moving along the “*intensified trajectory of consciousness*” towards the “*vortex*” into the deep trance state. (Lewis-Williams 2002a, 155).

Lewis-Williams suggests that the shamans probably believed that the area within the arc of the navicular entoptic phenomenon was an entrance into the spirit world and a gateway into transformation. In this sense, Lewis-Williams claims that the vortex and the navicular shape are both related. (Lewis-Williams 2002, 156).

◆ SOCIAL PRODUCTION OF ROCK ART IN SOUTH AFRICA

Rock Art, cosmos, and spiritual experience are all merged together in South African San traditions. The hunter-gatherers who painted these images merged the abstracted visual experiences of altered states together with real life material objects. According to Lewis-Williams, this fusion of real world and visions is most visible in the way the San painted ‘the threads of light’. They are nearly identical in all southern African rock shelters. The uniformity of the shape of the red line and spacing of the white spots is so striking that some scholars have proposed that they were all painted by the same artist. However, this cannot be true, but it appears that these settlements are connected by one ‘thread’ that shows that shaman’s formed a network that brought together communities scattered far apart, and this network manifested in the paintings of these settlements. (Lewis-Williams 2002a, 156).

It is highly unlikely that only shamans painted rock paintings. It is possible that the actual painting was left to certain individuals with practical skills to execute the pictures depicting the altered states visions described by the shamans. Once made, the paintings continued to serve their social function. The people believed that they were able to draw potency from some of the images. Touching the paintings was often a significant way to draw potency from the pictures, as was merely looking at them. Some of the paintings have been rubbed smooth by generations of people who sought to draw potency out of them. Similarly, making positive handprints was possibly linked to this same idea of potency drawing, rather than a gesture of leaving one’s mark on the wall. (Lewis-Williams 2002a, 160–161).

This behavior of ‘touching of the rock wall’ is also evident in Finnish rock art sites (Fig. 46). The magnificent rock cliffs were also believed to possess supernatural powers and according to Lahelma the hunter-gatherer Finnish and Sami people who believed that spirit beings lived inside these rock cliffs (Lahelma 2008, 59).

WHAT SEEMS STRIKING to me is that snakes, serpent monsters and ‘threads of light’, which are seen as ropes, stairs or ladders connecting our world with the world of the



Fig. 46. Handprints and other images painted on an open rock face Saraakallio, Laukaa, Central Finland. July 2014.

gods, heaven or skies, are rather universal aspects among the shamanic cultures. Anthropologist Jeremy Narby (1999) has written about the universality of snakes and threads, cords, ladders, ropes or vines connecting our world with the realms above (Fig. 47.). These features seem to be rather universal among the more recent shamanic cultures, appearing in the Amazon, Australia and Southern Africa, but they are missing almost completely from Upper Paleolithic rock art.

Lewis-Williams and his colleagues (Lewis-Williams & Clottes 1998a; 1998b; Lewis-Williams & Dowson 1988; 1990; Lewis-Williams 2002a) seem to focus on the entoptic imagery and finding corresponding evidence on the images that fit into these categories. For me this is not enough. Many of the visual shamanic cornerstones are still missing from the Upper Paleolithic examples from Western Europe, only the entoptic features visible, and even their role might be questionable. For me, there is also plenty of evidence to support another type of explanation related to persistence hunting experiences.

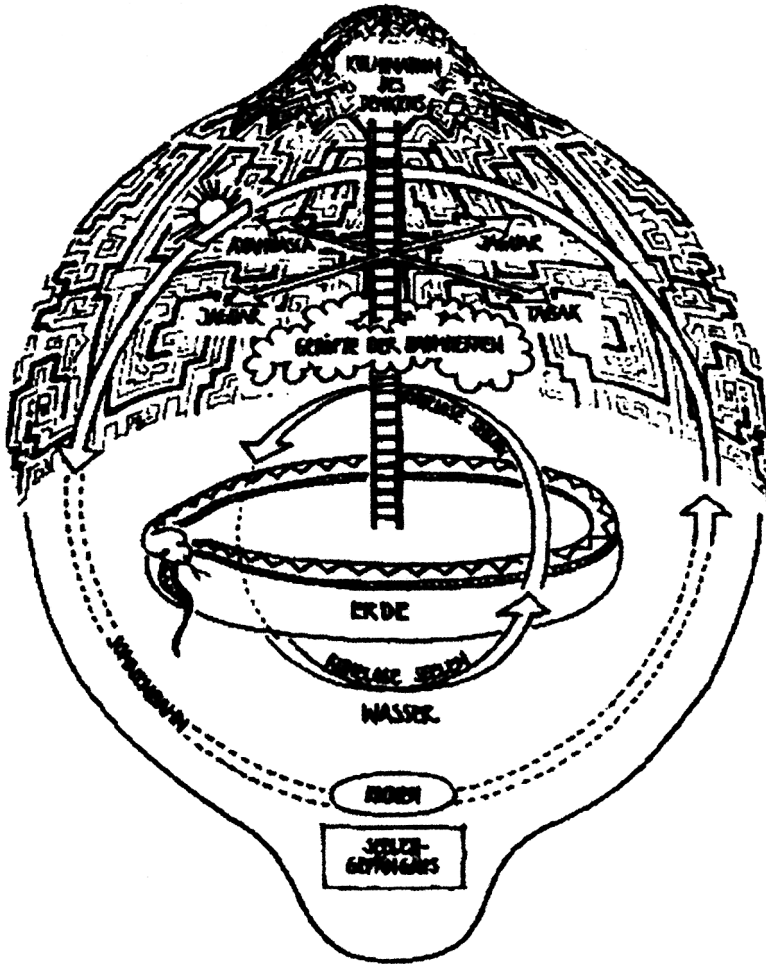


Fig. 47. Worldview with hallucinatory origins. Notice the ladder and a giant snake. The image was presented by José Chucano Santos who was a Shipibo-Conibo ayahasquero (a shaman who uses ayahuasca hallucinogenic brew to induce altered states of consciousness). Ucayali River in the Amazon rainforest in Perú.
 (Scanned from Narby 1999, 96.)

15. Therianthropes

This chapter is dedicated to the half-human half-animal figures, which are one of the most distinctive and universal subjects which appear in almost every rock art tradition anywhere in our world. In my opinion, this universality is important. These figures were originally explained to represent shamans dressed in their ritual costumes. David Lewis-Williams has claimed, based on ethnographic evidence, that these figures depict hunter-gatherer healers or 'shamans' on their trance journeys. Lewis-Williams's argumentation is based on a supposed cultural parallel comparable with the Southern African hunter-gatherers, but he does not make any connections between the rock art imagery and hunting. What if the therianthropic experiences had their origins in hunting? The Ju/'hoan hunter Kxao, Louis Liebenberg have all described such experiences earlier in this book. This experience is also evident among the skiing hunters of the Altai Mountains in Northern China.

One of the key ideas for Lewis-Williams's realization of the connection between San myths and images depicted in their art was the Game Pass Shelter panel also referred to as the Rosetta Stone (Lewis-Williams 2002b) (Figs. 17 & 67). He noticed that the depicted eland was obviously dying and it was accompanied by men who had distinctive animal features. When the San people fall into deep trance they might describe it as been spoilt or even dying. There is apparent connection between death and trance. The San healers also tell stories of their spirit helpers and how they might turn into animals during their journeys to the spirit realms. The therianthropic figures (half-human half-animal characters, or anthropomorphic and zoomorphic characters) are something that are present in all rock painting traditions. The connection between something that humans did from very early on, probably even before they left Africa, was tightly connected to the experience of transforming into an animal.

My suggestion is that this connection can be found in the therianthropic experiences related to persistence hunting and tracking. Earlier in this book I described how the Ju/'hoan hunter Kxao told me how he transformed into the tracked animal (see Chapter 9). We have also learned about South African anthropologist Louis Liebenberg (2013) who experienced a transformation into the tracked kudu as they were running it down (also in Chapter 9). I have also been able to find out how the skiing hunters of the Altai Mountains in Northern China experience transformations into the animal they are pursuing. According to the American ski historian and film maker Nils Larsen the Altai trackers can be quite impressive as they identify, follow and slowly build up a clear detailed image of the tracked animal (N. Larsen, personal communication, May 12, 2015).

As with the Kalahari hunters, the Altai hunters also feel they transform into the hunted animal. The natural urge to deduce what the animal is like, imagining what it will do next, combined with physical stress of constant pursuit and tracking on skis (which can last for several days) can sometimes metaphorically, but also occasionally quite literally, cause this hallucinatory transformation. During this process the hunters experience complex emotions of guilt, and they beg forgiveness, and often ask permission to kill the animal.

◆ SOUTHERN AFRICAN THERIANTHROPE

David Lewis-Williams wrote about therianthropes already in a journal article in 1972. He referred to this phenomena by describing 'superpositioned' images, and also makes a reference to the Game Pass Shelter panel as a juxtaposition of similar features on the eland and the humans next to it, but he also still believed that one of the figures was actually wearing an eland suit (Lewis-Williams 1972, 61, 63).

Patricia Vinnicombe (1976) was also interested in the therianthropes of the Drakensberg. She counted that there were a total of 155 images of human figures with animal attributes. 41 of these figures had animal hooves, 106 had animal heads, and 15 had both animal heads and hooves. Some of these are depicted with blood running from their noses. Some of the figures are wearing karosses (a simple animal hide used as a cloak, but it also serves multiple uses) and usually walking calmly together with others carrying large bundles on their backs. These figures usually have an eland head, are superimposed on eland, or have an eland painted on top of them. (Vinnicombe 1976, 323–324).

Other therianthropes appear to be naked or near-naked. These are separated into three distinctive categories. A small number of these are associated with dancing scenes, and some of these might actually have animal costumes. The second group of naked therianthropes appear to be spread across the panels with no apparent relation to the animals they are associated with. The third category is the largest one. This category is more consistent. The figures are elongated and slender with body markings, and occasionally body hair. These figures often have hooves and they stand cross-legged, or the limbs are widely spread. The arms-back, bending-forward posture (performed by the dancing Ju/'hoansi healers) appears on these characters. Vinnicombe admits to have no clear view of what these therianthropes really are. According to her, the explanation that they are hunters in disguise is not satisfactory. (Vinnicombe 1976, 330).

Other explanations of the appearance of the therianthropes has varied from hunters dressed as animals for stalking and camouflage, to people using animal skins and masks for ceremonial practices (Jolly 2002, 89). These customs are highly evident in ethnographic evidence all over the world, and there is some evidence indicating that some more ancient San tribes have also worn animal skins in their ceremonies (Jolly 2002, 92). But for most scholars, these customs appear to have no significant meaning other than their theatrical value.

There is good reason to suppose that the hallucination with active involvement of all senses of a person actually experiencing an transformation (which feels more real than reality) into an animal is much closer to the ultimate reason for humans to choose produce these images, but what I am interested in, is how this hallucination originated? I believe it was somehow related to persistence hunting and tracking as Louis Liebenberg's, Kxao's and Altai skiing hunters' animal transformation experiences appear to suggest?

Therianthropes are not evident only on southern African rock art, including South Africa, Lesotho, Zimbabwe and Namibia, but it appears to be something that appears everywhere, also among the Upper Paleolithic cave paintings and engravings in Western Europe. These figures are strikingly different from other imagery, but quantitative analyses have shown that they are relatively rare.

According to Pager (1971) only 4% of all the Ndedema gorge (Drakensberg) figures with human qualities were therianthropes. Similar numbers have appeared in other studies in the Drakensberg by Vinnicombe (1976) and Lewis-Williams (1981). It also appears that therianthropes are more common in the southeastern mountains, than in Western Cape Province. Therianthropes are also less frequent in Namibian and Zimbabwean sites. (Jolly 2002, 85–86).

◆ ZOOMORPHIC BELIEFS OF THE KALAHARI SAN

The Ju/'hoansi believe in supernatural creatures known as the Gemsbok People (Marshall 1999, 245–246; Biesele 1993, 95). According to Biesele, these creatures were known in Namibia and Botswana as *!Xoosi* and they were believed to transform into gemsbok (*oryx gazella*) as they left their camp and return to their human form as they came back. Others believed, that they had gemsbok heads on people's bodies. The Ju/'hoansi of the Nyae Nyae in Namibia believed the Gemsbok people were terrible creatures who drank ostrich urine and wore no clothes.

According to Mathias Guenther (1999a), The hunter-gatherer societies and shamanic societies usually have two similar temporal orders of existence. The early one, which is the mythological past, similar to the Australian Dreamtime, and the second one, which is the present. The San people have stories of their 'First Order of Existence'. The Nharo people of the central-western Kalahari in Botswana, believed that the early people "*had no customs and the animals' flesh tasted foul*". According to the Nharo of the Kalahari and the /Xam of South Africa, the first people were either therianthropes, or beings which were internally merged, but appeared like humans or animals. The transformation into the present day species happened through transformation. The end of the First Order, also stands for the end of immortality of all living things, which forever became mortal. (Guenther 1999a, 429–430).

According to Guenther (1999b), the San believe that humans transformed into animals, and animals turned into people. The human elements of the therianthropes was reduced or eliminated and their animal elements were brought to the forefront. The ambiguity of the transformation is still evident in San cultures. The San sha-

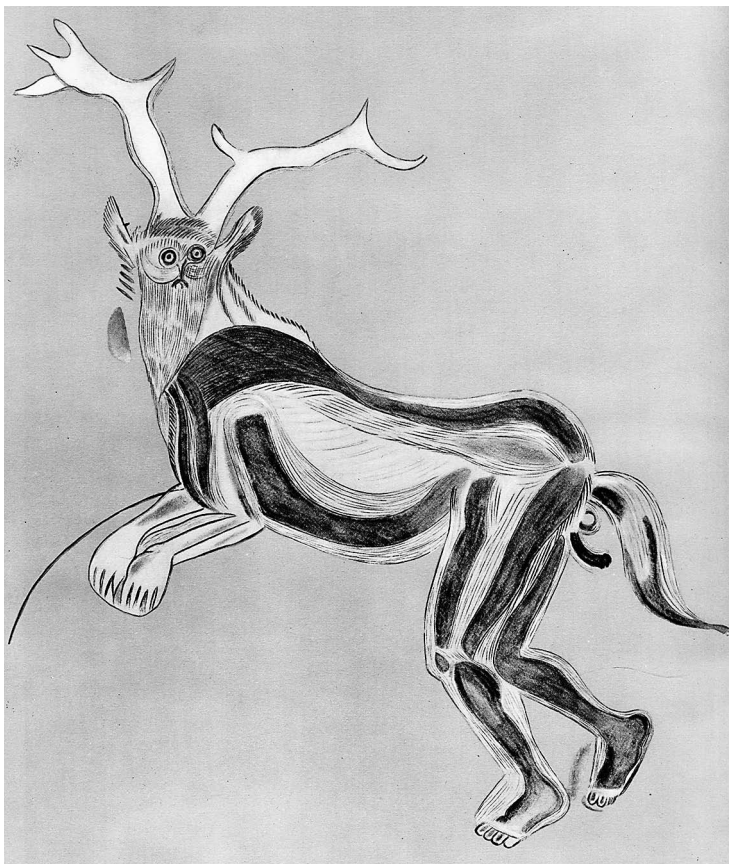


Fig. 48. The Shaman of Les Trois Frères
Copy by Abbé Henri Breuil
Volp caves, Les Trois Frères, Ariège, France. (Bégouën & Breuil 1958, plate XX).

mans still experience transformations into animals in deep trance and present and linear time converge with the mythic past. (Guenther 1999b, 69–70).

Some San groups still believe that certain animals still hold some of their human characteristics and the people avoid eating them for this reason. According to Lee (1979), the Ju/'hoansi refused to hunt elephants, since they were believed to possess an intelligence like a human and produce human-like sounds (Lee 1979, 234). Bieseles (1993) confirms the same issue. According to the San, the female elephants have human-like breasts and male elephants have human-like penises, the elephant's skin reminds them of human skin, and at death the elephant smells like a human and its flesh reminds them too much of a human flesh (Bieseles 1993, 149–150). The same ambivalence was attached to baboons, quagga (extinct species of zebra) and the hare by the South African /Xam people (Guenther 1999b, 74).

According to Megan Bieseles (1993) the Ju/'hoansi share the belief of initial transformation. The Ju/'hoan believe that a long time ago all animals were once people and one day the people sat down to discuss creating *n/om* (supernatural power) by branding people into different species of animals: Bieseles writes:

“Today we’ll *n=om ka n/om* [create *n/om*]. Then we’ll write the name of all the animals on their hides. Today we’ll *n=om ka n/om*, and we’ll use it to give a different design to each animal. From today people will no longer be people but will have markings and be animals.” (Biesele 1993, 116).

The idea of human transformation into animal and vice versa is very evident among the Southern African San people. There is also an evident ambiguity to be found. The Ju/’hoan belief that elephants have human characteristics and there is still a race of creatures known as the Gemsbok people, seems to suggest that the concept is not just a mythical allegory, but an ever-present belief, which must have its basis in the everyday experience of these people. In my view it is related to tracking and persistence hunting.

◆ THERIANTHROPE IN PALEOLITHIC ART IN WESTERN EUROPE

French prehistorian André Leroi-Gourhan (1968, 132) has made a laconic categorization of ‘*figures of men wearing horns or antlers*’. These figures included the man/bison found at Les Trois Frères (Fig. 48), and the man/bison at Le Gabillou. Other similar figures have emerged since. These figures were already titled ‘*Sorcerers*’ by Abbé Henri Breuil. In addition to these, Leroi-Gourhan introduces a few other similar examples, which he describes as *vaguer silhouettes, ghosts and horned men*. He describes one such figure from Font-de-Gaume, where there is a silhouette of a frontal view of a man with a short antler on its head. Another one is a bust of a ghost with bison horns at La Pasiega. There is a body in profile with mammoth tusks instead of arms at Les Combarelles. Then there is also a man or a stag with bison horns depicted at Pech Merle. (Leroi-Gourhan 1968, 133). For some reason Leroi-Gourhan does not include the vanquished man with birds head from the Shaft in Lascaux into this category.

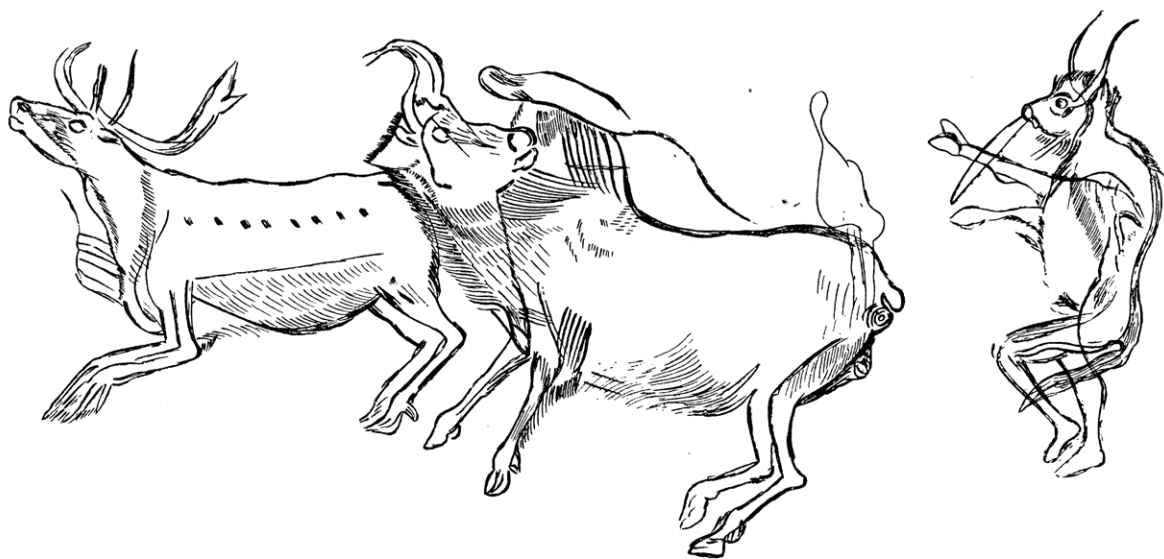


Fig. 49. A Shaman with a flute of Les Trois Frères, Volp caves, Les Trois Frères, Ariège, France. (Bégouën & Breuil 1958, 59).

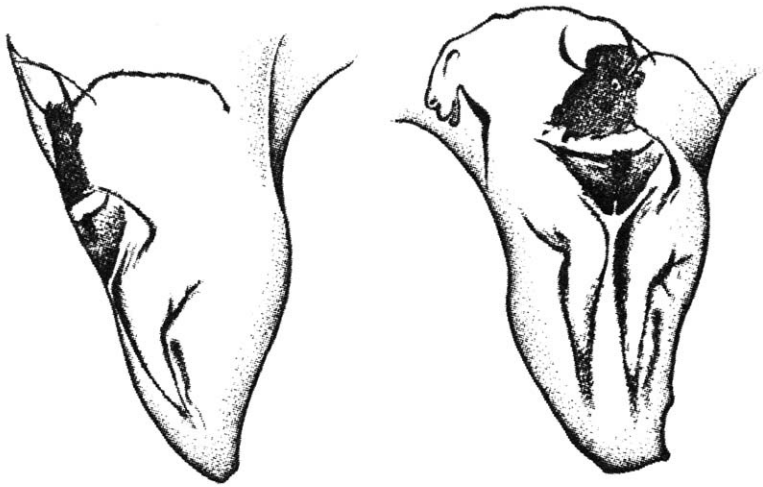


Fig. 50. Copy of the half-bison and half-human figure in the Chauvet Cave
Le Pendant de la Vénus, Salle du Fond, La Grotte Chauvet-Pont d'Arc, Ardèche, France.
Drawing by R. Dale Guthrie (2005, 208).



Fig. 51. Half-bison and half-human figure in the Chauvet Cave
Le Pendant de la Vénus, Salle du Fond, La Grotte Chauvet-Pont d'Arc, Ardèche, France
Photograph by Yanik Le Guillou

All of these therianthropes are quite recent examples, with most of them Middle Magdalenian (c. 14,000 BP). Pech Merle, Gabillou and Lascaux represent Gravettian and Solutrean cultures (c. 27,000 – 17,000 BP). The earliest examples of Upper Paleolithic art was not found when Leroi-Gourhan's book (1968) was published. After Leroi-Gourhan, plenty of new cases have emerged to challenge the idea of the origins of image making, or at least why the first artists chose their subjects.

The Lion Man of the Hohlenstein Stadel was not restored from its many pieces until 1969 by Joachim Hahn. The Lion Man (Figs. 26–28) is currently considered as the oldest dated evidence of representational "art". German archaeologist Claus-Joachim Kind and his colleagues (Kind, et al. 2014) have suggested that the Lion Man is c. 39,000 to 41,000 years old. The Lion Man is a therianthrope figure with lion's head and human body and it is carved off Mammoth tusk (Cook 2013, 29–30).

The most significant finds were made after Leroi-Gourhan's death (in 1986). The absolutely striking Chauvet Cave was not discovered until 1994. It houses a massive collection of Aurignacian art. Chauvet was soon followed by the discovery of the stone tablet in 1999 with a 35,000 year-old painting of a therianthrope from the Fumane Cave near Verona, Italy (Balter 2000). Prior to the discovery of the Chauvet Cave in 1994, Aurignacian art was never imagined to have been as complex, elaborate and beautiful.

There are several good examples of therianthrope representations in Chauvet Cave. The most famous of these is the painted half-bison and half-human figure, also referred to as 'Venus' or as the 'Sorcerer' (Figs. 50 & 51). This therianthrope is located at the 'Salle du Fond', which is the last chamber deep inside the cave. The painting is painted on the back side of a striking hanging triangular limestone cone, that extends down from the ceiling. This cone is known in French as 'Le Pendant de la Vénus'. It was unreachable from the pathway laid on the cave floor, and the painting remained unseen for years. In the Werner Herzog movie "*Cave of Forgotten Dreams*" (2010) the cinematographer manages to film the painting with a camera attached to a long stick.

This hanging outcrop is painted with images of four lions, one horse, two mammoths, one musk ox and with this particular therianthrope, also known as the Sorcerer. The lowest tip of this formation has a painting of a woman's lower body with long tapering legs. Her pubic triangle and her vulva are clearly drawn with black color. The female leg on the right also forms the strange zoomorphic legs of the bison, whose head looms over the vulva. This composition also seems to blend together with a cave lion, which continues from this image up to the left.

◆ PLEISTOCENE EXAMPLE FROM SOUTHERN AFRICA

But not all Pleistocene art is European. There is also very old prehistoric art found in Namibia. A stone tablet, consisting of two fragments, with a painted therianthrope on it, was discovered by Wolfgang Erich Wendt in the Huns Mountains in southwestern Namibia in the late 1960s. The radiocarbon (C_{14}) dates from archaeological horizon suggests that it could be 30,000 years old. Another very ancient rock art site is in the Matobo Hills, which is a giant granite batholith in western Zimbabwe. According to Nick Walker (2012) some of the small rock spalls with traces of paint on them date back over 12,000 years, but pieces with recognizable painted images date from after 10,000 years ago.

The Apollo 11 Cave image (Fig. 52) shows the body of a feline, with human hind legs with two barely visible lines at the head resemble gemsbok horns. At the abdomen there is something that may represent the sexual organ of a bovid. According to German archaeologist Ralf Vogelsang (2010) it may depict a supernatural creature, which would suggest a complex belief system (Wendt 1976, 6–7; Vogelsang, et al. 2010).

According to David Lewis-Williams and Jean Clottes (1998b), the therianthropes are present but rare in Upper Paleolithic cave art, but they do appear to be a common feature in all shamanic traditions everywhere and an often used subject in rock



Fig. 52. The 27,500 years old Apollo 11 Cave Therianthrope
The Huns Mountains, Southwestern Namibia.
Courtesy of State Museum of Namibia

art around the world. Lewis-Williams and Clottes (1998b) believe that they present clear evidence of the intimate relationship between the shaman and the spirit-animal (Lewis-Williams & Clottes 1998b, 19).

ACCORDING TO LEWIS-WILLIAMS, the therianthropes in southern African rock art depict shamans in their trance journeys. According to this idea, the shaman takes on the appearance of various animals and absorbs the *n/om* (supernatural power) of this specific animal. In the Drakensberg in KwaZulu-Natal, the most common animal the shamans have transformed into is the eland, the biggest and the most precious antelope of this area.

In the deepest level of altered states of consciousness, people experience sensations of blending together with imaginary mental images. They often experience

being transformed into animals. This might be particularly prevalent in people who are dependent on hunting, as the Paleolithic people of Central Europe and even the more recent Southern African hunter-gatherers definitely were. The San of the Kalahari believe they share their journey and n/om together with their spirit-animal guide, one such example was recorded by Biesele (1980).

IN THE LATE nineteenth century British colonial administrator Joseph Orpen was tracking down renegade chief Langalibalele of the Hlubi people over the Maluti mountains. There were several rock shelters along the way and Orpen was privileged to have his San guide Qing with him. At one point they saw a painting of men with rhebok's heads and Orpen asked Qing what did it meant. Qing answered that it depicted "*men who had died and now lived in rivers, and were spoilt ... by the dances of which you have seen paintings.*" (Orpen 1874, 2).

In 1975 Lewis-Williams was visiting a Ju/'hoansi village in Namibia and he was able to find out that Ju/'hoansi actually use the same word for spoil (kxwia) for blunting a sharp knife and going into a deep trance (Lewis-Williams 2002b, 253). The San often speak about trance states as 'dying' and the same word is used for being 'spoiled' and for 'entering a deep trance' by the Ju/'hoansi (Lewis-Williams 1980, 474).

The therianthropes in Southern Africa depict humans transformed into various animals, from locusts to wildebeest, which are both very treasured creatures for the hunter-gatherers of Southern Africa. The shamans often take the appearance of the animal, which they are dancing in the healing dance. Therefore the use of the eland n/om song might have caused the shaman to take the eland form. The task the shaman is performing might also affect the transformation. The quest for rain might transform the shaman into a swift or swallow, which are both associated with rain.

The southern African hunters did not disguise themselves as animals for hunting or ritual purposes. There are some cases in the Northern Cape and in Namibia, where the San occasionally disguised themselves as ostriches to get closer to animals, especially zebra and wild horses, while stalking them (Wikar 1935, 179). This practice is also depicted in South African rock art and copied by geologist George Stow (Vinnicombe 1976, 330). Animal caps were also used in rituals, but these caps are also depicted in rock art and they are easy to distinguish from therianthropes.

THE SHAMANIC APPROACH does seem to explain some paintings depicting therianthropes, but does it really explain all of them? The practice of making such images and statuettes does seem to reach so far into the past, and spread so widely to every single place where humans have gone, that it really feels important to try and find an answer to this. An answer that would connect the tradition to practical means such as persistence hunting and tracking. The therianthropes and other depictions of animal transformations are clearly one of the most evident connections between rock art in southern Africa and elsewhere. It is also evident in Upper Paleolithic parietal and portable art in Western Europe. In my view the therianthrope figures could be seen as depictions of a persistence hunter's transformation experience into the pursued animal.

16. Tracking and Prehistoric Art

Now I will bring us back to the 'neurological bridge' and acknowledges the leap of faith people are demanded to execute to actually use this model for any interpretational use of it. David Lewis-Williams has mostly neglected the aspect of hunting as a likely tool to understand ancient and more recent rock art. He does however acknowledge that several animals in the Lascaux cave are depicted with hoof prints instead of actual hooves (Lewis-Williams 2002a, 194). The mentioning of this fact was actually one of the things that led me to this thesis. We must keep in mind that the people who made the images during the Paleolithic were first and foremost hunters. Any clear indications of hunting must therefore be considered as important. The animals are not often depicted as vanquished nor dying. It is actually very rare, but this infrequency does not make their rare existence irrelevant. The majority of modern humans still eat animals, but they usually hate seeing them suffer. Instead we love seeing animals roaming free and happy, but we still keep treating them horribly. The contradiction is evident.

When I saw a Ju/'hoan hunter and shaman G/aqo softly caressing and thanking the springhare they had just caught in the Nyae Nyae, I understood that these people had a strong appreciation towards all living creatures. Gentle and affectionate thanks was the least they could do after this small creature was transformed from a wild roaming animal into nourishment of this small group of hunters.

Direct hunting scenes with someone pointing a spear or a bow at an animal are extremely rare in ancient rock art, but that does not mean we could not find evidence of 'fragments of the hunt'. These fragments might be much more subtle, like the hoof prints on the animals in Lascaux. Direct hunting scenes are even rare in Namibian rock art, where there are a lot of engraved and painted tracks. However, if the ancient hunters who painted these images also hunted animals without weapons, by running them down for instance, it would be obvious that no weapons were depicted. There are indeed images of humans running after animals and possibly tracking them. In some cases these hunters are partly transformed into the chased animal. These subtle visual cues are what I refer to as 'the fragments of the hunt'.

One of the key arguments in David Lewis-Williams's work since the late 1980s (e.g. Lewis-Williams & Dowson 1988; 1990; 1992; 1999; Lewis-Williams & Clottes 1998; Lewis-Williams 2002a) has been the possible cultural similarities between the recent (from mid-nineteenth century to present-day) Southern African hunter-gatherers and the prehistoric (40,000 to 11,000 years ago) Cro-Magnons of Western Europe. The hunter-gatherers of the Drakensberg, contemporaries to the /Xam people, still made, or had recently made, rock paintings when Bleek and Lloyd studied their

language and culture in the late nineteenth century. The Upper Paleolithic people arrived from the Middle East some 45,000 years ago and gradually started making portable art and images in caves and rock walls, but they possibly brought the image-making tradition with them all the way from Africa. To elaborate the /Xam beliefs and cultural behavior, Lewis-Williams often incorporated ethnographic evidence from other more recent hunter-gatherers, like the Ju/'hoansi, who still inhabit parts of the Kalahari desert but have never made art. This cultural connection between the ancient and contemporary San was established by Lewis-Williams and Megan Biesele (1978).

◆ LEAP OF FAITH

All of these connections demand certain leaps of faith, but Lewis-Williams' argument is very convincing and has been widely accepted, but also criticized. Paul Bahn (1998) has been one of the most audacious opponents of the shamanic approach with mostly justified arguments. R. Dale Guthrie (2005) has offered a very detailed and possibly naturalistic explanations to various aspects of Paleolithic art. When the 'neurological bridge' was introduced by Lewis-Williams and Dowson (1988) it was one of the major breakthroughs in the study of the Upper Paleolithic art.

Before that, the scholars of prehistoric art were doomed to gather quantitative information on their punch cards. The tedious structuralist approach offered by Laming-Emperaire and Leroi-Gourhan opened up new interesting views especially regarding the speculated functions of the cave itself and the dissemination of different motifs inside it, but besides that, the methodology was only for gathering data. The theories that were devised prior to the structuralist were thought to be naive. But still, the hunting magic theory by Abbé Breuil seemed like the only source of interpretative means.

The hypothesis presented by Lewis-Williams and Dowson (1988) was based on the idea that all anatomically modern humans shared the same nervous system. Therefore, they felt that it was most likely that at least some of the features in Upper Paleolithic art could be explained with neurological reasons. Merlin Donald's concept (2001) of the hybrid nature of our consciousness implies, that we can suppose that the actual framework of the nervous system might be similar, but its functions are always cultured by environment and social interaction, including symbolic systems, which are totally different in our modern world. Therefore we can suppose that establishing a deep neurological bridge is not entirely possible.

However, the entoptic imagery is very similar in all people. It is independent from culturally transmitted experience. The only difference is the ways the people interpret these entoptic abstract hallucinations. We might suppose that Donald's enculturation process does not affect the entoptic hallucinations, and therefore the neurological bridge could still be possible on this level. We might also suppose that the deep hallucinations of a trancing hunter will revolve around the biggest and fattest animals he is desperately trying to pursue on daily bases. The hunter's hallucinations, in this respect, might have been similar as long as humans were hunters.

According to Lewis-Williams (2002a), the Upper Paleolithic European paintings have some particular visual features that they have been executed to depict '*visions of animals*' rather than to depict real-life animals. The animals were obviously not painted straight from natural living models. According to Lewis-Williams, almost all the animals depicted in European caves seem to float in space. Therefore he believes that they might be renderings of visions (Lewis-Williams 2002a, 194).

◆ HOOF PRINTS IN PALEOLITHIC CAVES

Some of the animals, especially the aurochs in 'the Hall of Bulls' and elsewhere in the Lascaux Cave are depicted with a hoof print instead of hoofs. The hoof prints are depicted from a vertical perspective on some of these images. This method would enable the painter to apply information of the animal's spoor inside the image of the animal. Only an experienced tracker would think of this. This notion drew me into looking for more features of tracking in prehistoric and more recent rock art. Upper Paleolithic artists were most likely excellent trackers and showing the hoof print might imply that there is something important in that particular print. The more recent trackers of the Kalahari can sometimes use a single hoof print as a profound source of knowledge. The interpretations might go way beyond practical knowledge, like sex, age, speed and when the print was made.

Occasionally one thinks that the tracker is also able to read more profound psychological information from the spoor. With this notion in mind, I thought that depicting the print instead of the hoof must have been important to the painter.

According to Lewis-Williams (2002a, 194), depiction of hoof prints instead of hoofs (Figs. 53, 60 & 61) makes the animals appear to be floating, which is important for his arguments of the hallucination aspects of these images. However, according to Guthrie's practical claim, this sort of depictions of hoof prints instead of hoofs was important for the tracking hunters who painted them. A similar way of depiction is also evident in some of the animal images in Aboriginal rock paintings in Australia (Guthrie 2005, 268).

◆ BLOOD SPOOR

Dale Guthrie (2005) has also described how the mysterious red dots in Upper Paleolithic caves, from Aurignacian Chauvet (Figs. 54 & 55) to Solutrean Lascaux, could actually depict blood tracks. Blood trailing is widely practiced by hunters everywhere. The small droplet of blood is an indicator that the hunter is still following its prey and has not lost it although no other signs of the animal would be available. Guthrie's own blood trailing experience comes from the boreal conditions of Alaska, where vegetation is very thick and other animal tracks, besides these red dots, are easily hidden (Guthrie 2005, 270–271).

Blood trailing is also practiced by the Kalahari San, although their habitat and the tracking conditions are different. According to South African anthropologist and master tracker Louis Liebenberg (1990, 63–64), the Kalahari San retrieve their



Fig. 53. The Great Black Bull. Notice the hoof print
The Axial Gallery, Lascaux Cave, Dordogne, France. (Aujoulat 2005, 107).



Fig. 54. Reindeer with blood spoor, also known as the Dancing Reindeer (Le renne dansant)
Salle du Fond, La Grotte Chauvet-Pont d'Arc, Ardèche, France. Photograph by Jean Clottes.



Fig. 55. Reindeer with blood spoor in Chauvet Cave.
Salle du Fond, La Grotte Chauvet-Pont d'Arc, Ardèche, France.
Drawing by R. Dale Guthrie (2005, 272).

arrows after shooting and if one of the arrows is missing, there is a good chance that the animal was hit. If only the reed arrow shaft is recovered next to the animal spoor, the poisoned arrow point might still have penetrated the skin. Sometimes the blood spoor may indicate how seriously the animal was wounded. Poisoning might also cause the animal to panic and to behave in an agitated way, and the tracks might show the animal milling around. The panic will occasionally make the animal run down itself, enabling the arrow poison to work faster, ultimately killing it. A well-advanced state of poisoning is indicated by black blood or blood in the animal's faces, which will also have a distinctive smell. (Liebenberg 1990, 63–64).

The blood spoor depicted in Upper Paleolithic art is a very good example of tracking depicted by the ancient hunter-gatherers (selection of these images are presented in Guthrie 2005, 272–273). The small droplet of blood indicates the presence of the animal. The hunter has been in close proximity (about 25 meters) of the animals while causing the hemorrhaging with an atlatl dart. Occasionally the small droplets are the only sign telling the hunter about the whereabouts of the animal, its possible condition and where it might be trying to escape.

This small red dot is a symbol of this animal and a sign that it will soon be dying and that it is now only up to the tracking skills and speed of the hunter whether he will have food for his family and the members of his band. Although Cro-Magnons already had complex technology like atlatls and darts with razor-sharp bone harpoon tips, the wounded animal would still be alive and it could still run for a considerable distance before collapsing. This would mean a long pursuit and plenty of tracking. The faster the hunter could get to the animal, the better chance he (most of the hunters in hunter-gatherer societies are male) would have against other predators catching the wounded animal. This means that the hunter would have to be a good tracker and possess endurance running abilities. The Cro-Magnon hunter most likely had to run long distances quite often in order to get food. Pat Shipman (2015) has recently suggested that the Upper Paleolithic hunters might have used wolf-dogs for tracking and exhausting their prey.

◆ ANIMAL AND HUMAN TRACKS

According to Paul Bahn (1998) animal and human tracks are one of the motifs in rock art that spans across time and location. Engraved human footprints was one of the first kinds of rock art noticed by the Europeans in North America. The majority of explanations on tracks in rock art seem to accept that the tracks are not simple depictions, but symbols filled with some deeper mythological and even supernatural significance. However some depictions of animal spoor, such as the macropod tracks at the site of Sturts Meadows in southern Australia depict actual prints. The engravings show scaled reproductions of the spoor of different kangaroo species. They also reveal individual speeds, weight and gait. Some of the larger tracks are attributed to local extinct megafauna. (Bahn 1998, 192–193).

Most rock engravings in /Ui-//aes (Twyfelfontein) depict animals and their spoor (Figs. 9, 10, 11, 12 & 56) Some of the oldest engravings probably predate the majority of the rock paintings elsewhere in Namibia. The /Ui-//aes (Twyfelfontein) rock engravings have a large collection of realistically engraved depictions of animal spoor. Animal tracks, and tracks in general are extremely significant to hunter-gatherer societies. Even human spoor contains valuable information for the society.

The Ju/'hoan interpreter Kxao told me in Nyae Nyae in Namibia in 2015 that he could identify all members of their village from their footprints. He could tell where people had been going and on some occasions for what purpose. If someone had gone out to get water, the spoor would be light and fast to get water, but slow and heavy on its way back. Also drips of water might had been visible. He also described how all humans had individual grooves on the soles of their feet and they were actually rater easy to recognize. Louis Liebenberg (1990) writes about human spoor identification:



Fig. 56. Engraved springbok print and a real print next to our campsite /Ui-//aes, Twyfelfontein, Damaraland, Namibia. December 2014.

“The ability of Kalahari hunter-gatherers to interpret spoor is cultivated over a lifetime and developed to an exceptionally high degree. For example, men and women are able to identify the footprints of an individual person. ... A person’s spoor ... may be characterised by the length of stride, the way the ball of the foot is twisted, the way the toes may be pointing inward or outwards, the way the toes are splayed or curled in, the way the foot throws up sand or characteristic scuff marks. Each person has an individual mannerism when walking which can be identified in his/her spoor. These phenomena enable experienced trackers to identify an individual’s spoor even in soft sand where the exact shapes of the feet may not be clear. The small size of hunter-gatherer bands makes it easier for trackers to identify the spoor of another person. ... When I asked a group of !Xo trackers if they could identify the spoor of individuals, they found it very amusing that I should ask them such a stupid question. To them it is difficult to understand that some people can not do it.” (Liebenberg 1990, 72).



Fig. 57. Ju/'hoan tracker Bo examines a wildebeest spoor Nyae Nyae Conservancy, Namibia. December, 2014.

Animal tracks are most important source of knowledge on animal behavior. The Ju/'hoan men and women keep their eyes constantly on animal tracks. The tracks are visible signs of animal (and insect) activity that is almost never visible for the hunters. The Ju/'hoansi (and other San groups) can read complex information from the tracks. The spoor is always analyzed. If the spoor is fresh and the animal would be possible to catch it will be followed. Otherwise the spoor is analyzed and discussed for a reason that reminds me of reading the newspaper. Analyzing spoor is always done in good humor, but it is often also argued upon. Some younger hunters might be too imaginative analyzing the spoor, and more experienced hunters might be more conservative.

The majority of animals hunted by the more recent hunter-gatherers are not killed upon initial contact. Rather, they were tracked down, stalked and wounded, stunned or immobilized which was followed by a prolonged flight. When the animal was out of sight it had to be tracked to be killed later. We can assume that it would have been nearly impossible for our hominin ancestors to stalk and wound an animal without effective projectile weapons, before they were able to track them down.

◆ LEVELS OF TRACKING

The Kalahari San are extremely skillful trackers. They can visualize incredibly complex events from animal signs, which can be anything like a clear hoof prints on the ground, feces or urine, trampled grass or broken branches, disguised prints under blanketing leaves, drips of blood, or just a faint swish of a furry springhare tail, or another animal giving a warning sign of a nearby predator. Obviously these skills have a long evolution and our early ancestors did not acquire these skills at once.

Liebenberg (1990) has distinguished three levels of different types of tracking to reconstruct the possible evolution of tracking. These levels are:

1. Simple tracking
2. Systematic tracking
3. Speculative tracking

Simple tracking refers to the simple following of animal footprints in ideal tracking conditions where prints are easy to follow. Systematic tracking is based on systematic gathering of information from several types of natural signs to develop a detailed image of what the animal was doing and where it might be going.

Systematic tracking requires much greater skill to recognize animal signs and probably demanded higher brain capacity. According to Liebenberg, systematic tracking especially in difficult conditions could be the first stage of hypothetico-deductive reasoning, which involves a more complex way of thinking.

Speculative tracking demands the fabrication of a working hypothesis on the basis of several types of signs. It requires a deep knowledge of the animal behavior and environment. As soon as the hunter has developed a hypothetical mental reconstruction of the animal's activities, the hunters look for signs where they expect to find them.



Fig. 58. Superimposed baboon tracks on an elephant track
Damaraland, Namibia. December, 2014.

◆ SKILLFUL TRACKERS

Liebenberg claims that the ability to identify spoor goes far beyond recognizing the prints of other humans and hunted animals. According to a study on the Ju/'hoan tracking skills (Stander, et al. 1997, 332) the team of trackers was able to identify the spoor of individual animals, with a 93.8% success rate of the 569 cases. The hunters can identify prints of a large ant, but also the prints of beetles, scorpion, millipede, legless skink and lizards. The women appear to be as knowledgeable on spoor as the men, occasionally even better. Also the sex of the animal is sometimes distinguished from the spoor (Liebenberg 1990, 73).

According to Liebenberg (2013), the tracker will try to look for all kinds of natural signs of animal presence, not just prints. The tracker tries to find scent, feeding signs, urine, feces, saliva, pellets, territorial signs, paths and shelters, and auditory signs. The tracker also tries to pay attention to signs left by non-living elements. This includes signs left by leaves and twigs rolling in the wind, long grass sweeping the ground and dislodged stones rolling down a slope. (Liebenberg 2013, 61–62).

One of the most demanding aspects of tracking is related to determination of the age of the spoor. The tracker is able to use several tools to interpret this. The estimates are most accurate with fresh spoor, but as time goes by the accuracy decreases, and tracking becomes more or less intuitive. Droppings, urine and saliva are

good indicators of the spoor's freshness. The spoor's age might also be determinate by the superimposed tracks of subsequent footprints. In the morning a nocturnal track might be superimposed by a diurnal animal enabling a more accurate estimate of timing. (Liebenberg 2013, 67).

In more difficult tracking conditions following the obvious track becomes time-consuming and a tracker might need a better solution. The hunter might need to rely on his knowledge of the terrain and animal behavior. Establishing a hypothetical reconstruction of the animal's activities might help the hunter to predict the animal's movements. The hunters then decide where they will go next to find more indicators of the animal's presence. The hunters will test their hypothesis against reality. (Liebenberg 2013, 70).

◆ SPECULATIVE TRACKING

According to Liebenberg, the hunters visualize how the animal was moving and place themselves in its position. Skillful hunter will save time with good educated guesses about the animal's next moves. The hunters are involved in systematic gathering of information along the way. They will constantly take notes of the animal signs to establish a coherent image of the followed animal and its activities. The hunter will try to read the animal's sex, size, the age of the spoor, where it came from, how fast it is moving and where it will go next. As the hunters read the signs the group will slowly form a complete image of the animal they are pursuing. (Liebenberg 2013, 71).

In the most advanced form of speculative tracking, the tracker will create a working hypothesis based on available signs and knowledge of the terrain and animal behavior. After the hunters have a mental reconstruction of the events, the trackers will look for the signs where they expect to find them. The signs will be sought only to confirm or refute their expectations. The initial hypothesis is reinforced if the signs are found. If the trackers fail to find any signs to prove their hypothesis, they will quickly abandon the initial one and investigate other alternatives. According to Liebenberg: "*Speculative tracking involves a continuous process of conjecture and refutation and is based on hypothetico-deductive reasoning*". (Liebenberg 2013, 73-74).

The hunters try to anticipate the animal's movements and after conceiving a mental model of animal's behavior they follow an imaginary route the animal might have taken. Trackers try to visualize the animal moving through time and space and ask themselves what they would do if they were the hunted animal. According to Liebenberg, most trackers begin as systematic trackers and as they gain knowledge on the expected signs, environmental characteristics, and animal behavior they can trust more heavily on their experience. This prior experience is pivotal for a speculative tracker. According to Liebenberg, the methods of systematic and speculative tracking are so fundamentally different that most trackers have serious difficulty making the transition. In open terrain systematic tracking may be more efficient, but when the tracker moves to a thick woodland or rocky hills, speculative methods are needed to save time. (Liebenberg 2013, 75-76).

◆ TRACKING IN CAVES

The senior researcher Adreas Pastoors from the Neanderthal Museum together with the senior researcher Tilman Lenssen-Erz from the Institute of Prehistoric Archaeology at the University of Cologne and their colleagues (Pastoor, Lenssen-Erz, et al. 2015) conducted a very unusual study in Upper Paleolithic caves in 2013. With the assistance of Megan Biesele, they employed three experienced Ju/'hoan trackers Tsamkxao Ciqae, Ui Kxunta and Thui Thao from around Tsumkwe, Namibia to interpret some of the few Cro-Magnon footprints in four French caves with famous prehistoric art. The selected caves were Niaux, Fontanet, Tuc d'Audoubert and Pech-Merle. The trackers were able to identify age and sex of the humans, also the number of them, and purpose of their activities to some extent, such as transportation of clay for the bison sculptures in Tuc d'Audoubert, which is one of the Volp Caves along with the Grotte d'Enlène, and Les Trois Frères.

◆ SUPERNATURAL INTERPRETATION FOR TRACKS IN ROCK ART

Some rock art researchers (e.g. Forssman & Gutteridge 2012, 193; Eastwood & Eastwood 2006) try to explain animal spoor with more supernatural aspects. One such explanation is based on first-kill rituals by the Ju/'hoansi and the ancient /Xam people (Lewis-Williams & Biesele 1978). The Ju/'hoan hunters in Dobe in Botswana did not hunt for eland anymore in the late twentieth century. This was due to hunting restrictions and game scarcity. However, David Lewis-Williams and Megan Biesele were still able to interview one Ju/'hoan hunter in 1975 who was about 65 years old during the time and compare the eland hunting traditions and beliefs that were related to eland (Lewis-Williams & Biesele 1978).

The contemporary Ju/'hoansi living in the Nyae Nyae Conservancy in Namibia are denied the opportunity to hunt for giraffe and eland. They are also forbidden to collect increasingly rare tortoise in the Nyae Nyae. According to Ju/'hoansi, the eland has more *n/om* (supernatural power or potency) than any other animal. (Lewis-Williams & Biesele 1978, 123).

In a first-kill ritual among the Ju/'hoansi, the boy was seated cross-legged on the eland's skin and his arm (right arm for a male and the left arm for a female eland) was then scarified. After the scarification, old man took the foreleg of the eland (right foreleg of a male or a left foreleg of a female) and made a circle of hoof prints around the skin. This was performed for future luck in tracking, so that the boy would always find the right spoor and not lose it (Lewis-Williams & Biesele 1978, 129). However, there is no evidence that would demonstrate that this ceremony would have any connections to the animal tracks in rock art.

◆ PRACTICAL APPROACH

There is no doubt that the Paleolithic hunter-gatherers of the Europe during Pleistocene did not count on their tracking skills and on their endurance. The ability to read signs of the nature was pivotal for the human existence. According to Dale



Fig. 59. Painted bear tracks
Cascadia Cave, Cascadia State Park, Oregon, North America. February 2015.

Guthrie (2005), the spoor of the animal was an equally important mark of the identification of an animal for the ancient hunter-gatherers as was the contours of its horns or tail. A tracker may actually know the animals better from their spoor than from their other characteristics. The spoor is a living documentary of animal activity. The tracker is constantly aware of what has taken place on a particular site and when did these events happen.

The animal spoor is depicted everywhere where people have been making rock art. I was deeply impressed when my good friend, South African-born sculptor and a rock art enthusiast Andries Fourie took me to see bear tracks engraved in a rock shelter known as the Cascadia Cave in the Cascadia State Park in Oregon by ancient Native Americans (Fig. 59). Although these people might have had complex ritual reasons for painting these tracks, they were still closely tied together with practicality of tracking.

WHEN I WAS in Namibia among the Ju/'hoansi and documenting local rock art around the Brandberg and other sites in Damaraland and Erongo region, I also had the privilege to meet with the Namibian archaeologist Goodman Gwasira from the University of Namibia. As it happens he was also studying the aspects related to tracking in Namibian rock art. He had also just consulted Louis Liebenberg in Cape Town, only a week before I met him in late November 2014.

According to David Lewis-Williams and Megan Biesele (1978) the Ju/'hoansi used to take advantage of the eland's docile nature. The hunter was able to run after an eland which would ultimately become winded and stand stock still refusing to move anywhere. In the presence of strong wind, the animal would stubbornly keep running upwind. However, if there was no wind, it was possible to chase the animal right into the camp, where it was easier to dispatch.

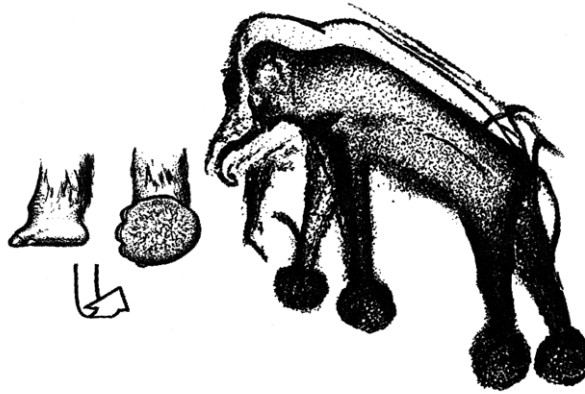


Fig. 60. Mammoth depicted with foot prints.
La Grotte Chauvet-Pont d'Arc, Ardèche, France.
Drawing by R. Dale Guthrie (2005, 139).

The European colonial explorers used to take advantage of this by running down eland on horseback and impressing the local hunter-gatherers. On these occasions, the pursued eland have been reported to sweat excessively and foam at the mouth. According to Lewis-Williams and Biesele (1978) the obvious hunting scenes are less common than supposed. But some rock paintings depict running people pursuing eland which have white foam falling from their mouths. Images of hunters shooting the animals with arrows are less common than unarmed runners, which might depict persistence hunters.

◆ FRAGMENTS OF THE DANCE OR HUNT?

According to Lewis-Williams, the trance visions are linked to a concept they call 'Fragments of the dance' (Lewis-Williams & Pearce 2004, 100; Lewis-Williams & Hollmann 2006, 509; Lewis-Williams 2010b, 6), which he has recently used to describe rock art with certain visual elements or qualities. It is an undeniable fact that the healing ceremony, also known as the great dance, has been (and still is) an instrumental part of the social fabric of southern African hunter-gatherer societies. This would certainly offer a good starting point for rock art explanations or interpretations. One of the key 'fragments' include the therianthropic creatures and compositions like the famous 'Rosetta Stone' (Figs. 17 & 67).

Although these hunter-gatherers certainly relied on shamanic ceremonies and on the knowledge it provided in altered states of consciousness, there could be another explanation. These people were hunter-gatherers and their existence was tied to hunting and gathering. This had been the case throughout the generations for possibly even as long as two million years, coinciding with the advent of *H. erectus*, the first hunter-gatherer.

Lewis-Williams has used the metaphors that can be connected to the experiences related to the healing ceremonies. The paintings do not depict the ceremonies, like people dancing in circles. They depict the allegories that are connected to the experiences. These allegories include bleeding noses on people and animals, therianthropic figures (half-animal and half-human), mythical creatures such as water-ani-



Fig. 61. Mammoth depicted with foot prints with other surrounding imagery
La Grotte Chauvet-Pont d'Arc, Ardèche, France.
Photograph by Jean Clottes.

mals, or serpents with monstrous features, underwater realms and flying in the sky, crawling into holes and emerging elsewhere, and threads of light. All of these, and several other elements can be found in the rock art of Drakensberg in South Africa.

But even if you try to apply this imagery and their explanations to the Namibian rock art, which is very close (from Drakensberg to Dâureb/Brandberg is c. 1700 kilometers as the crow flies), sometimes you are completely lost, or you have to use excessive amounts of imagination to find these connections. And when you try to apply the same 'Fragments' to the more ancient cultures living in completely different environments, finding these 'Fragments' becomes even more difficult. I would like to suggest that occasionally it is easier to find fragments of the hunt, which are related to human-animal interaction, especially to tracking and persistence hunting.

◆ ORIGINS OF THE DANCE IN PERSISTENCE HUNTING?

There is a very good reason to suppose that the ancient hunter-gatherers who left Africa c. 60,000 years ago, already had shamanic beliefs and practices (Rossano 2009). This is evident if you examine the beliefs and rituals among hunter-gatherer societies all over the world. In my view, it would be too imaginative to suppose that they all invented the existence of altered states of consciousness individually, and took a step even further to establish communal rituals that involve deliberate means to achieve these states, and practicing these rituals bound these societies together. This culture existed in some way as the people left Africa. Some people induced these altered states of consciousness with music and dance, others with hallucinogens extracted from local plants. Therefore the first images in caves in France, Indonesia, Spain, Australia and elsewhere could be results or important elements of this ritual practice.

Lewis-Williams does not claim (nor do I) that trance ceremonies themselves produced the first images, but that the impact of the experiences which the people went through might have been so powerful that it gave birth to the original necessity for telling about these experiences visually. What Lewis-Williams does claim is that the subjects depicted in early rock art might be related to altered states experiences, which might have their origins in shamanic ceremonies.

However, since the altered states of consciousness could be achieved without any deliberate ritual, there is a chance we could also establish a connection with the birth of these rituals and a connection between this origin and why certain things are more often depicted. If we suppose humans had shamanic practices at least 60,000 years ago, we could try to trace back the activity that fulfills at least these following qualities that we already presented earlier on this book at the beginning of Chapter 2:

1. Modern humans evolved from more archaic species of *Homo*. Two million years ago human ancestors were already possibly adapted to run long distances (e.g. Carrier 1984; Liebenberg 1990; Bramble & Lieberman 2004). Evolutionary adaptations that took place before *H. erectus* seems to have promoted more efficient solutions to enable long distance walking, but especially long distance running (Lieberman 2013). This provided a possibility for further running adaptations enabling systematic scavenging. Endurance running capabilities related to systematic scavenging might have resulted more complex methods of reading animal tracks and ultimately to persistence hunting.
2. Endurance running adaptations (for systematic scavenging and persistence hunting) gave a selective advantage to humans under the pressures of natural selection. It not only ensured their existence, but it also enabled them to flourish to some extent. The ability to run down antelope ensured a more reliable food source that was rich in protein and fat, which was still accompanied with plant foods to ensure a constant source of energy. Good quality foods and demanding cognitive pressures, which resulted from more complex means of tracking, could have been a combination that spurred the brain growth. As their brains got bigger, the hunters were able to utilize more complex tracking methods, resulting in better hunting success, further enhancing the possible brain growth.

3. Running down animals is a physical skill, which has not drastically improved during the last two million years, but rather during the past 200,000 years as long as humans have been humans. But running down an antelope requires good tracking skills. Complex tracking methods were difficult enough that they could have pushed towards the adaptations for more enhanced cognitive skills. These skills proved beneficial and resulted more successful hunts. The physical aspect of endurance running adaptations might have evolved when systematic scavenging gave the necessary selective advantage. According to Louis Liebenberg (2013) simple tracking was probably learned almost two million years ago, but the most complex form of speculative tracking emerged together with *Homo sapiens* c. 200,000 years ago.
4. Persistence hunting (at least endurance running related to systematic scavenging) was practiced already a very long time ago, so it is sufficient to say that it could have enabled new cognitive adaptations. The combined adaptations that enabled running down antelope using ever more elaborate tracking skills was a long evolutionary process that lasted c. two million years.
5. Persistence hunting produced experiences that could be considered evidence for altered states of consciousness. Endurance running itself is known to make alterations in our consciousness (Dietrich 2003; Raichlen, et al. 2012). Endurance running, combined with the intense imaginative process required by complex tracking, together with hyperthermia and dehydration is more than enough to derail human consciousness causing alterations in our perception (e.g. Liebenberg 2013).
6. Exhaustive practice of persistence running is symbolically still a part of some shamanic rituals, especially in Africa. The Kalahari San trance dancers circle a fire throughout the night engaged in their healing ceremonies stomping their feet and breathing heavily, deliberately inflicting hyperventilation. The healing dances also have strong connections with the animals they hunt. The dancers often imagine transforming into the animal which they are mimicking during the healing dance.
7. The mental transformation into the animal which the tracking hunter or tracker is pursuing. The transformed humans, or therianthropes, are a very common subject in Paleolithic and more recent rock art. We can also find substantial evidence from animal spoor, running humans and images of the largest and fattest animals. Many of the 'Fragments' that have been attributed to shamanic explanations, could also be connected to the altered states experienced while practicing hunting by running and tracking.
8. Although persistence hunting vanished from the Kalahari in the early 2000s, endurance running is still practiced today and it gives pleasure and meaning to people lives. Humans often train and participate in marathons for the pure pleasure it provides us (Lieberman & Bramble 2007).

When we look at these eight qualities listed above, we notice that persistence hunting, tracking, and endurance running in general appears to be extremely important for human evolution. What I am suggesting is that persistence hunting was

so important and effective among the early hunter-gatherer societies that the variety of experiences related to it are visible in early rock art. I am not trying to summon back the dated hunting-magic ideas that were trumpeted before the French structuralists, like Laming-Emperaire and Leroi-Gourhan or shamanic explanations that originated from South Africa from such writers as Vinnicombe, Lewis-Williams, Clottes and Dowson.

What I am suggesting is that we could approach this issue accepting an idea of 'fragments of the hunt'. The ancient and more recent hunter-gatherers that produced rock art had been hunters for a very long time and all things that were connected to this activity, most certainly captivated their minds.

◆ FRAGMENTS OF HUNTING

Although direct hunting scenes are extremely rare in ancient rock art, that does not mean we could not find evidence of the '*fragments of the hunt*'. According to Leroi-Gourhan (1968), the hypothesis concerning Upper Paleolithic parietal art, of bewitching the quarry, or depicting the hunted animals, was obviously insufficient. It was based on the extremely few examples of animals showing wound marks. (Leroi-Gourhan, 1968, 172–173).

According to Tilman Lenssen-Erz (2007) only 0,6 per cent of the images depicted in Dâureb/Brandberg can be interpreted as having human animal relationships and even these cannot be interpreted as being hunting scenes, due to their lack of weapons. However, persistence hunting does not require any weapons. And the '*fragments of the hunt*' would include similar visual imagery to the ones Lewis-Williams has suggested in his approach to '*fragments of the dance*' (Lewis-Williams & Pearce 2004, 100; Hollmann & Lewis-Williams 2006, 509; Lewis-Williams 2010b, 6).

According to Lewis-Williams:

“Two of the most commonly encountered painted elements — depictions of eland and other antelope, and 'fragments of the dance' — occur here. 'Fragments of the dance' are references to the Great Dance, the central religious ritual of today's San people and their ancestors. ... Images that combine human and antelope features are a widespread feature of southern African hunter-gatherer paintings and engravings. Researchers believe that such confluences, known as therianthropes, depict supernaturally potent beings. Those that incorporate antelope and human characteristics are the most commonly recorded examples of this category of image, but, as we shall see, therianthropes can incorporate elements associated with other animal species.” (Lewis-Williams & Hollmann 2006, 509).

The German rock art scholar Tilman Lenssen-Erz was very kind in offering me his tremendous knowledge on this matter and providing me with several images showing hunters and therianthropes tracking down their quarry following spoor while running. There are some interesting hunting scenes in the Naib and Hun-

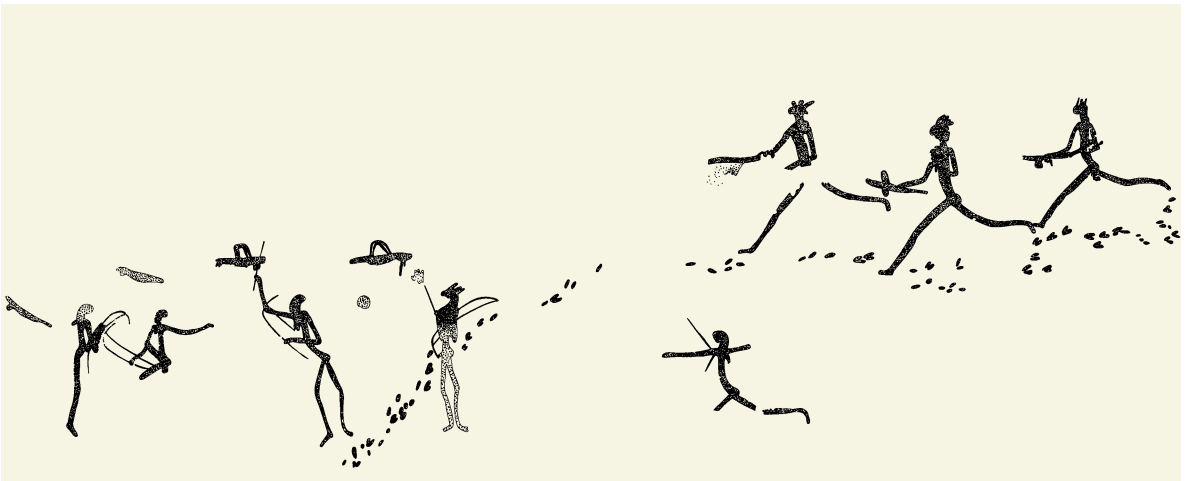


Fig. 62. A possible persistence hunting scene
Hungorob gorge, Dâureb/Brandberg, Namibia (Pager 1992, site 96).

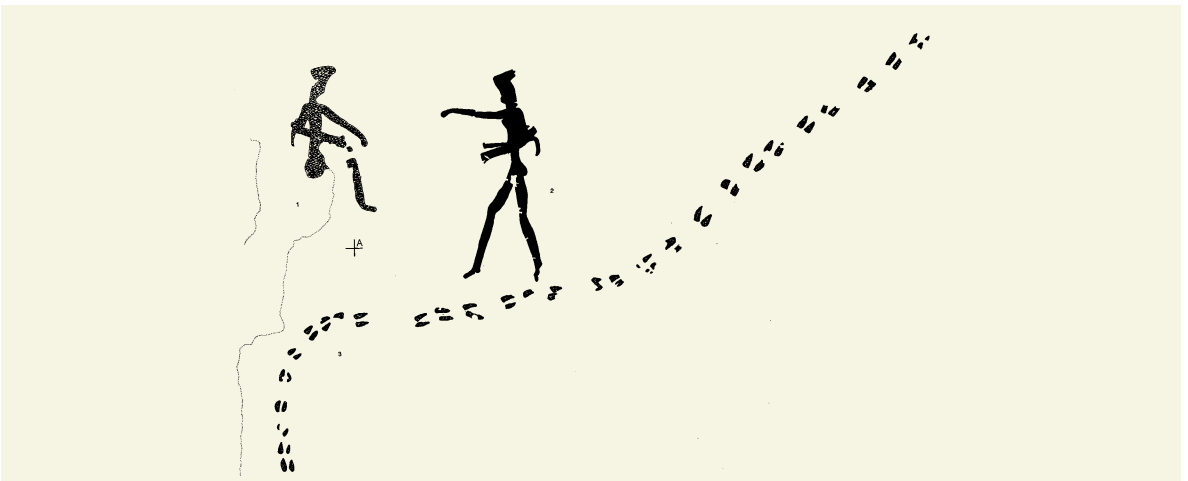


Fig. 63. Trackers
Naib gorge, Dâureb/Brandberg, Namibia. (Pager 2006, site 109).



Fig. 64. A possible persistence hunter
Hungorob gorge, Dâureb/Brandberg, Namibia. (Pager 1992, 75).



Fig. 65. Sexual parade of the reindeer
Font-de-Gaume, Dordogne, France.
Digitally enhanced copy by author after R. Dale Guthrie (2005, 67).

gorob gorges at the Dâureb/Brandberg mountain in Namibia, depicting hunters tracking and running (Figs. 62, 63 & 64). One particular scene in Hungorob (Fig. 62) depicts some of the hunters partly transformed into animals.

Some aspects of this description by Pieter Jolly (2002) of South African rock painting could be attributed to describe a metaphorical persistence hunt: “*Others may be shown with a bow in hand, shooting arrows, although hunting is very seldom depicted. Some are shown relating to elands in unusual ways, reaching out to or touching these animals. In many cases it is not possible to determine whether they are engaged in any activity or are they doing anything that could be described as a goal-oriented.*” (Jolly (2002, 88–89). The absence of direct hunting scenes and hunting equipment could be explained with the persistence hunting and tracking hypothesis. Running down antelope, does not require any weapons. During the hunt, the hunter might experience transforming into an animal, which could in turn explain the therianthropes reaching out or touching the animals, which is ultimately goal orientated. This similar activity of grabbing the elands tail at the end of the persistence hunt was described by Elizabeth Marshall Thomas (2006, 32) (Figs. 17 & 67).

Intense prolonged tracking is often incorporated with extensive physical stress and mental struggle trying to imagine where the hunted animal is going, why is it going there, and also how to get there before it does. All of these elements are instrumental in transforming and derailing the human mind into altered states of consciousness. Therefore, we could suppose that similar ‘fragments’ are being depicted in rock art that would actually be more closely linked to hunting. However, in hunter-gatherer societies, hunting and healing ceremonies are also very closely entwined and hard to distinguish.

According to Lewis-Williams (1972), the Bleek and Lloyd collection refers too / Xam belief that if the hunter felt that he was “*feeling of identification with the quarry*” the hunter would avoid eating meat of swift creatures for a fear that the animal would escape him (Lewis-Williams 1972, 61).

◆ TO EAT AND PAINT

One of the controversies of Upper Paleolithic parietal art is the argument that the people who painted the images did not eat the same animals depicted on the cave walls. It contradicted the Abbé Breuil's sympathetic hunting magic idea. Abbé Breuil had claimed that the Cro-Magnons painted images of large game to evoke good fortune for hunting. Leroi-Gourhan's excavations on Pincevent site revealed that the Upper Paleolithic people did not eat the largest and fattest animals, instead they ate a diet which consisted mainly of reindeer and some other small game including: hares, wolves, eggs, birds, fish and a variety of leaves, roots, grains, fruit, bulbs, mushrooms, with occasional horses and mammoths (Curtis 2006, 158; Altuna 1983; Mithen 1988). Animals, such as reindeer, of which they found most evidence of, were almost never depicted in the caves, with the exception of an amazingly tender and affectionate image of a reindeer licking another one in Font-de-Gaume (Fig. 65).

This hypothesis was contradicted by a view provided by R. Dale Guthrie (2005) who has substantial experience in hunting large game such as moose in Alaska. According to Guthrie (2005, 265), the biggest issue with Leroi-Gourhan's argument is that the hunter-gatherer camp-sites are not usually kill-sites. When you kill a large animal, there is a certain urgency to get away from the kill-site before scavengers or other predators come around. Only the best cuts of fat and meat are taken with the hunters along with the extremely important and useful hide. Therefore, the archaeological data would not reveal the presence of these animals as there is nothing left.

Humans are fairly good hunters, but humans are lousy protectors of their food when they have other predators or scavengers who might be attracted by the carcass. If there are enough people in the hunting band and the animal is fairly small, the carcass could be divided into smaller satchels which are carried away. The Ju/'hoansi hunting band is usually two to four men and only occasionally a little larger (Marshall 1999, 144).

The Kalahari San might dry out some of the meat in the dry heat of the Kalahari to make *biltong* (dried meat) and then transport the meat in bundles back home from the kill-site (Silberbauer 1981, 208–209). If the animal is larger and the hunters are unable to carry it with them, they are left with two options. The hunters can take the meat they can carry with them and leave rest of the carcass for scavengers. Optionally, the hunters stay with the carcass to protect it and send one of their number to bring back enough help from the village. Occasionally, when the killed animal was too big for anyone to carry it, the whole village moved temporarily to the carcass. (Marshall 1999, 144–146).

But what is essential about this idea, is that none of the large and heavy bones would find their way to the actual camp-site just like Guthrie described (Guthrie 2005, 265–267). Guthrie has plenty of ethnographical and first hand experience to support his opinions. This only shows that some of the rock art scholars might actually lack the necessary mindset to think like a hunter, which would be important. After all, the Upper Paleolithic rock art was made by hunters. If their rock art correlated with the animals actually hunted by the hunters, they would have also hunted for large animals like bison, auroch, woolly mammoth and rhinos.



Fig. 66. Giraffes with water falling from skies or maybe a waterfall and possible lightings
Tsisab gorge, Dâureb/Brandberg, Damaraland, Namibia. December 2014.

Ethnographic evidence has shown that the Southern African San definitely ate the animals they painted most frequently. The Drakensberg San people most definitely ate eland, which was the most depicted animal. Giraffe, which is the most typical animal depicted as a central figure in many Namibian rock paintings, is also a central character in the myths, and a subject for n/om songs of the more recent Kalahari San. Giraffe was still hunted quite recently it is often considered a rain animal by the Ju/'hoansi (Marshall 1999, 76) (Fig. 66).

According to Paul Bahn (19998) there is a huge variance among ethnographic statements involving the correlation between the hunted and depicted animals. The Australian Aborigines also often painted the animals that they had caught. Some elders have even stated that food animals were the exclusive subject for their art. However, Native American Susquehannock of the sixteenth-seventeenth centuries were a clear exception to this. They ate mostly deer and elk, but never painted any images of these animals (Bahn 1998, 234–235).

Bahn also suggests that one of the problems with the shamanic approach is ethnographic evidence from Australia suggesting that not all rock art was made by shamans depicting imagery from altered states of consciousness (Bahn 1998, 242). But Lewis-Williams does not claim that all rock art has shamanic origins. He writes that we do not have to explain everything to explain something (Lewis-Williams 2002a, 8).

◆ HUNTING PARTY

According to Guthrie (2005), the Cro-Magnon hunting party would have consisted of approximately from 3 to 10 hunters. This is consistent with some of the Paleolithic art that depicts groups that could be identified as hunting bands. A hunting party of three to seven would have been able to take advantage of more complex group hunting strategies necessary to ensure their success. They would have had individuals with good eyesight, better endurance, faster speed, strength, tracking experience etc. Many of the hunters would have had many of these qualities, but even older individuals with more experience on tracking would have been necessary although they would have been otherwise too frail for hunting.

After killing a large animal, these people would have had to form a defensive group. The carcass of a woolly mammoth would have been huge, and the smell of its blood would have attracted predators such as lions, large bears, leopards, saber-toothed cats, hyenas and wolves. (Guthrie (2005, 276).

The human populations living in Europe during the Pleistocene were surrounded by large game animals that provided them with meat, leather, sinews, bones, all of which were of utmost importance for their lives. They also had to maintain equilibrium with the large number of extremely dangerous predators. Large game was coveted for a reason and even the mere idea of these animals captivated the imagination of these humans.

People did not necessary just want to imagine them defeated and bleeding. They probably admired them for their grace and the ability to provide them with their immediate necessities. I see no contradiction between the notion that they possibly ate the same creatures which they painted, engraved and sculpted. From this perspective, the images reflect the idea of these animals as the providers of human existence. Some of the animals are still depicted as bleeding and dying. This is also natural as dying animals were a necessity for the existence of the hunters and their families.

Obviously the relationship of the Paleolithic hunters with predators such as lions and bears was much more complex. This is also reflected in their rock art. The predator images are much rarer, with most of the predators such as lions are depicted in the deepest chambers of the caves. According to Elizabeth Marshall Thomas (2006) the Ju/'hoan hunter-gatherers of the 1950s were not seriously threatened by the lions nor cheetahs. Their biggest threat was the sudden night attacks by the leopards, but the Ju/'hoansi were also terrified by the hyenas, that also posed a serious threat to the people. The Ju/'hoansi were also very cautious of getting back to camp before

sunset to avoid contact with the nocturnal predators. A group of humans is still a possible target for any predator, but very seldom a predator is willing to take that chance, because the humans themselves are terrifying creatures and most animals are scared of our presence and rarely take the chance to attack humans which can violently fight back.

THE ORIGIN OF visual culture must have been a deep emotional experience which was a part of the everyday lives of the early hunter-gatherers. Lewis-Williams has claimed that the origin of this experience was in their shamanic rituals. I propose an extension to this view: visual culture originated in the altered states experiences closely related to the everyday lives of the early hunter-gatherers. The emotional origin was extremely strong with a very long tradition in human ancestral history. Strong emotionally powerful experiences of unity and transformation had been an integral part of persistence hunting possibly even for two million years. This background certainly was important and it must have contributed for the origins of why the early artist chose to make images related to these experiences.



Fig. 67. The Rosetta panel of the Game Pass Shelter
Site: Game Pass I 7240, Mooi River district, KwaZulu-Natal, South Africa
Photographer: Benjamin Smith. Copyright Rock Art Research Institute

17. Conclusions

This chapter tries to take all the necessary threads of the presented ideas, and to highlight the most important ones and describe the possible importance of my observations.

Lewis-Williams used the Rosetta panel (Figs. 17 & 67) of the Game Pass Shelter to unravel the connections between ancient rock art depicted in the Drakensberg together with ritual practices of the nineteenth century /Xam people and the interpretations provided by the last remaining Maluti San hunter Qing (Orpen 1874). This particular panel could also be interpreted as depicting persistence hunters finally catching their prey.

Lewis Williams describes the panel:

“To the left, is a depiction of an eland ... Its head is lowered, its forelegs buckle, its exaggerated hair stands on end, and its hindlegs are crossed. Holding its tail is an elongated, transformed anthropomorphic figure. It, too, has hairs standing on end over its body ... its legs are crossed in exactly the same way as the eland’s hindlegs, and it has finely depicted cloven hoofs, as does the eland. ... Earlier writers had seen this congeries of images as a depiction of supposed ‘eland-fighting’— something similar to bull-jumping in ancient Knossos. ... The eland is in a dying posture. Its erect hair, lowered neck with swaying head, and stumbling gait all add up to an eland that is succumbing to poison from a San arrow.” (Lewis-Williams 2002b, 251–252).

Lewis-Williams’s description is most accurate. The painting might be a very good example of something he has described as the ‘*Fragments of the Dance*’ (Lewis-Williams & Pearce 2004, 100; Hollman & Lewis-Williams 2006, 509). But it could very well be a very allegorical illustration of a persistence hunt. The eland is obviously dying and the man is holding it by its tail. The band of hunters have all merged themselves into the hunt and ultimately they have all experienced being transformed into the hunted eland.

Elizabeth Marshall Thomas (2006) notes that David Lewis-Williams once told her about a rock painting in the Drakensberg that might depict hunters running down a bull eland. He probably meant either the painting of a running eland depicted from behind (Fig. 68) or the painting of an eland looking back over its shoulder (Fig. 85). Marshall Thomas also notes that there is an image of a hunter holding an eland by the tail with the eland showing no resistance appearing to droop in a position expressing fatal exhaustion (Marshall Thomas 2006, 36). This painting is the Rosetta Panel from the Game Pass Shelter (Figs. 17 & 67).

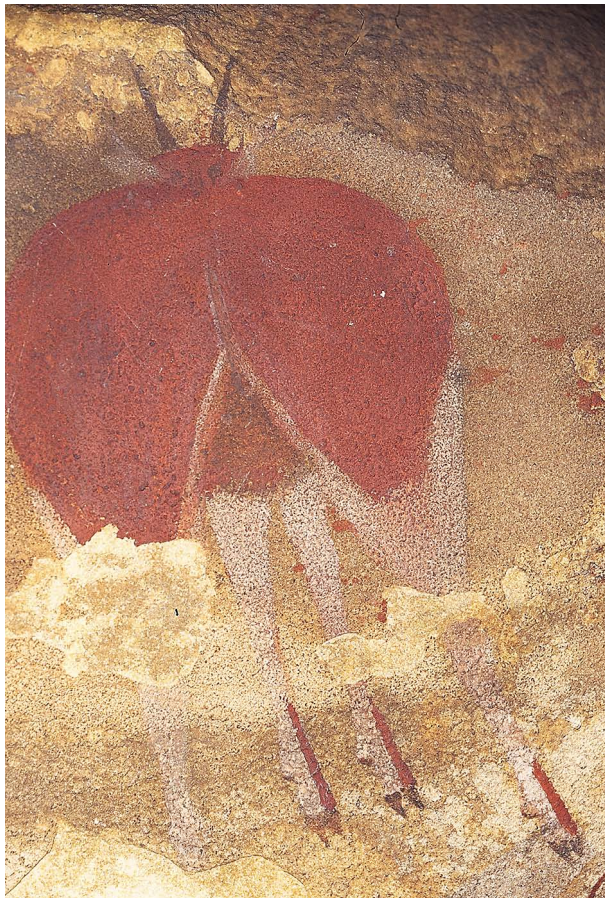


Fig. 68. Running eland from behind
Site: Mpindle district, KwaZulu-Natal, South Africa
Published in: Lewis-Williams, 2003b, 42.
Photographer: Geoffrey Blundell. Copyright Rock Art Research Institute

I am not insisting that the Rosetta Panel depicts a naturalistic hunting scene. It is clearly far from it. However, if we take the hallucinatory experiences reported by the persistence hunters such as Louis Liebenberg (Liebenberg 2013, 19), the transformative experiences reported by the Ju/'hoan (described in Chapters 9) and Altai trackers (Chapter 15) and the possibilities of vivid hallucinations caused by prolonged running (described in Chapters 10), under our consideration, we should notice that if the figures in the Rosetta panel would be persistence hunters, the zoomorphic qualities of these figures could be explained.

The figures could be representations of the zoomorphic experiences of the tracking persistence hunters. The eland appears to be exhausted and dying. The figures have clearly appropriated animal features and they also appear to be exhausted. I also cited Marshall Thomas (2006, 32) how the persistence hunters of the Kalahari in the 1950s would grab the animals tail and spear the animal to death after they caught the animal at the end of the long pursuit (see Chapter 9). Marshall Thomas also notes, how the hunter did not necessarily need even weapons. The persistence hunter without a weapon could push the eland over and lie on its neck and clamp his palms over the eland's nose and mouth, and suffocate it (Marshall Thomas 2006, 32).



Fig. 69. Eland looking over its shoulder
Bergville district, KwaZulu-Natal, South Africa
Published in: Lewis-Williams, 2003b, 56.

Photographer: Geoffrey Blundell. Copyright Rock Art Research Institute

Lewis-Williams's shamanic explanation might be true, but I claim that we should always try to find an explanation, which is closely linked to the everyday practices. Of course I acknowledge that shamanic practices also fit into this category. However, human ancestors have been persistence hunters possibly even two million years, but at least for the last about 200,000 years. We should not neglect the possibility that these ancient trackers and persistence hunters could have experienced altered states of consciousness while tracking and running after their prey. This book has presented a wide range of ancient and more recent examples of rock art, which could be interpreted through this persistence hunting hypothesis. I believe this idea has been overlooked prior to this study, because the rock art scholars did not have the evidence presented by Dennis Bramble and Daniel Lieberman in 2004 and by Louis Liebenberg in 2013. To the best of my knowledge, the connections between persistence hunting and the subjects depicted in Upper Paleolithic and more recent rock art have never been properly studied prior to this thesis, besides some important remarks written by Liebenberg (1990; 2013) which are also mentioned in this study in Chapter 13.

◆ THE KEY ADAPTATIONS AND INNOVATIONS

I would like to once more explain some of the innovations and evolutionary adaptations which were important for certain stages in human history. A number of varieties of *Homo* (c. 2,000,000 – 200,000 years ago) lived mostly in Africa, but also in many other parts of the world, with several lineages diverging and further evolving into different directions e.g. *Homo neanderthalensis*. But this study is mostly concerned with the early individuals who lived in Africa. The following aspects defined their existence.

The ancestors of *Homo erectus* were originally opportunistic scavengers, but they gradually began to explore methods of systematic scavenging (Liebenberg 2013, 26). *H. erectus* was quick to adapt to new environmental conditions and we might suppose that from fairly early on they began to use their cognitive capabilities for tracking. Their physiology was already showing signs of their endurance running capabilities. This ability made them much more efficient in systematic scavenging, but we could suppose that *H. erectus* might have even been the first persistence hunter. Whether they purposefully hunted or not, they already used stone tools to butcher animal carcasses.

The *H. erectus* also used wooden spears for digging and possibly even for killing animals from close and safe distance. These spears had sharp stone points after 500,000 years ago. But for safely killing an animal from a close distance requires some sort of sedation of the prey. The modern hunter-gatherers in the Kalahari (also in South America) use poisoned arrows to slowly sedate and ultimately killing the animal, but persistence hunter is able to track and run after the animal as long as the animal becomes too exhausted to move. Fatally exhausted animal would have been an optimal target for a *H. erectus* hunter armed with a thrusting spear.

This part of the early human evolution coincides with Merlin Donald's (2009, 8) idea of *Mimetic culture*, which might have started about two million years ago. Mimesis enabled imitation and through rituals humans learned to handle fire and the skill of tool making. These traits were soon dispersed. Mimesis also set the stage the future evolution of spoken language.

ABOUT 100,000 – 70,000 years ago there was a group of modern humans living on the coasts of South Africa (Henshilwood, et al. 2011). Genetic evidence supports the idea that all modern humans originated from Southern Africa (Tishkoff et al. 2009). These individuals were hunter-gatherers, but they also relied on aquatic creatures such as mussels, penguins and seals. According to Liebenberg (2013, 4), these people already used speculative tracking and probably ran down antelopes. The archaeological evidence (Broadhurst, Cunnane & Crawford 1998) shows that they ate eland, which was the most preferable animal for the last persistence hunters. The South African coastal people used refined stone tools to butcher animal carcasses and there are some evidence suggesting that they might have used microliths for projectile weapons such as atlatl (spear-thrower) or bow-and-arrow (Brown, et al. 2012).

This period, according to Merlin Donald was the age of the *Mythic culture*, which was based on spoken language, especially storytelling. These societies al-

ready possibly had diverse stories based on myths, which contained notions of authority, gender and morality. The embedded earlier mimetic level appeared in rituals, clothing and habits of action. (Donald 2009, 8). The engraved piece of ochre and necklaces found from the Blombos cave on South African coast suggests that these early modern humans indeed had some sort of symbolic culture (Henshilwood & Marean 2003; Henshilwood, et al. 2002; Henshilwood, d'Errico & Watts 2009; Henshilwood, et al. 2011). There is a chance that these people already had shamanic beliefs and rituals, but there is no evidence to prove it.

ABOUT 40,000 YEARS ago the modern humans had reached and settled in Western Europe (Higham, et al. 2011; Benazzi, et al. 2011). Their hunting and gathering and fishing way of life continued until about 11,000 years ago. These people used complex speculative tracking methods and hunted for large game. Just like their predecessors, they used used stone tools to butcher animal carcasses, but their tools were much more complicated to produce and they were often decorated with images. They used atlatls (spear-throwers) and possibly even bow-and-arrow for taking down the animals.

However, their weapons still required close contact (c. 25 meters) with the animal. Anthropologist Pat Shipman (2015) has suggested that the hunters employed wolf-dogs, which would have pursued the animal and humans only intervened when it was time to kill the exhausted animal safely from close distance. However, humans relied heavily on tracking and most probably on exhaustive pursuits, with or without wolf-dogs. Humans living in Ice Age Western Europe employed an unprecedented array of complex tools, from stone knives to ivory harpoons and darts.

The *mythic culture* of these societies (Donald 2009, 8) already left visual evidence of their diverse forms of art. They already had a complex symbolic culture (language, rock art also in caves and elaborate decorated tools and portable art), which bound together larger groups of people living distances apart. They also might have had shamanic beliefs and rituals, which is indicated by the wide spread nature among of these practices among the hunter-gatherers everywhere.

MODERN HUNTER-GATHERERS HAVE a huge variety of regional differences, but some principals apply among the hunter gatherer societies almost everywhere in the world. Hunter-gatherers might occasionally cultivate plants, but when seasonal opportunities presented themselves, they do not hesitate to leave. Modern hunter-gatherers employ speculative tracking and hunt large game whenever it is available. Ethnographic evidence suggests that persistence hunting was practiced at least in southern Africa, Australia, North America and Mexico (Nabokov 1981). After the invention of skis, skiing down large animals could have been possible on northern parts of the Europe, Fennoscandia, Russia, Kazakstan, Mongolia and China (Bo 2011; Jenkins 2013; N. Larsen, personal communication, May 12, 2015; Larsen 2010; Larsen 2011).

The exact date of the invention of skis is debatable, but they could have been employed much earlier than archaeological evidence suggests (Burov 1989; Formetti,

Ardigò & Minetti 2005; Gjerde 2010; Kulberg 2007; Åström 1993). More recent and contemporary hunter-gatherers use various forms of projectile weaponry. Bow and arrow hunting is a very effective method for hunting various types of animals, but atlatls and a variety of spears were also used. In many places hunters also use returning and non-returning boomerangs, blowguns and poisoned arrows and darts. Hunter gatherers used stone knives, and complex darts and harpoons, but began to trade iron tools whenever it was possible. Recent hunter gatherers had complex modern symbolic culture, with language, rock paintings and elaborate decorations on tools and portable art. The majority of hunter gatherer societies sustained a shamanic belief system and rituals.

◆ PERSISTENCE HUNTING AND HEALING DANCE

I believe there is a possibility that persistence hunting might have played a role in developing into shamanic practices, such as trance dance ceremonies still practiced by the Ju/'hoansi in the Kalahari. In the healing dance, the group of men stomp in a circle around a fire for hours while breathing heavily. The women are placed in the center of the circle clapping and singing producing rhythmic music. This process of exhausting physical activity, heavy breathing and loud music can propel a dancer into an altered states of consciousness. One of the things reported by the Ju/'hoan healers after gaining consciousness after trance is a experience of transforming into an animal.

According to Lewis-Williams and Dowson (1988) and Lewis Williams and Clottes (1998), similar traditions and experiences might have been important for early hunter-gatherer societies. According to their hypothesis, the imagery and events experienced in altered states of consciousness might have been the things that early painters depicted in rock faces. This might be true in many cases. However it does not explain the origins of the trance ceremonies and it does not include the huge variety of images that depict what appears to be hunting scenes and natural observations of animal activity.

Simultaneously, several features discussed throughout this book (therianthroic figures, tracks, nasal bleeds, hunting scenes etc.) attributed to the shamanic approach, could also be depictions of hallucinatory experiences related to persistence hunting. What I am suggesting is that persistence hunting along with tracking, combined with the experience of transforming into an animal (similar which was reported by the Kalahari and Altai hunters in Chapters 9 and 15 and by Louis Liebenberg in Chapters 9) might have been a very powerful experiences for hunters in prehistoric times. Some entoptic illusions or hallucinations might also be related to endurance running, since long distance running have also been practiced for other reasons such as communication, transportation, travel, warfare or even purposefully arranged vision quests (Nabokov 1981).

The advantage of this hypothesis is that this experience is closely connected to the daily necessary practical activities, such as tracking, running and persistence hunting. This hypothesis is not based on a cultural add-on without any connections

to life's necessities. It is at the very core of their existence. The transformation into an animal and other possible altered state experiences encountered while tracking and running down animals might have spurred the cultural behavior that ultimately led to ceremonies with a particular intention to evoke altered states experiences.

◆ FROM HUNTING TO CULTURAL PRACTICES

William H. McNeill (1995) claims that humans are particularly good at working together. He also believes that this social ability is one of the most important reasons why we have been so successful. This cooperative skill is often enhanced with communal dances and other rituals. This sort of behavior is prevalent in all human cultures. This behavior must have its origins in behavior that was originally related to hunting, otherwise it would not have emerged. In my view, persistence hunting and the evolution of tracking skills were crucial to human existence. Endurance running skills established in the *Homo* population and through a period which lasted almost two million years our ancestors perfected their skills for endurance and tracking. Complex symbolic behavior did not emerge, before this process which led to more enhanced cognitive capabilities. Louis Liebenberg (2013) believes that tracking and persistence hunting was the original activity which propelled humans to develop modern human behavior.

The origins of music and dance might also be related to endurance running. It is very likely that our bipedalism, tracking and endurance running ultimately led to ceremonial '*endurance dancing*' similar to what is still practiced by the Ju/'hoansi. Therefore, it is difficult to distinguish some '*fragments of the hunt*' from the '*fragments of the dance*', since their origins are in bipedalism, tracking, endurance running and possibly even in dancing. However, we cannot reduce all hunter-gatherer rock art only down to shamanic properties. Hunting was undoubtedly an important activity for these societies, and obviously it played a very important part in their imagination and possibly even in the development of their cultural practices, including symbolic and visual culture and ceremonial practices.

ALTERED STATES EXPERIENCES related to hunting, like the transformation into an animal, is also tied together with the healing dances performed by the Ju/'hoansi. If we allow ourselves to accept that our ancestors tracked animals and used their ability to run down these animals, we will acknowledge that the transformation hallucinations experienced by the hunters could have occurred as long as two million years ago, but at least 200,000 years ago, throughout the modern human existence. These hallucinatory experiences were tied together with their hunting and the experience had no ceremonial origins. This idea does not demand acceptance of larger communities, the ability to speak, or symbolic languages.

THE MOST IMPORTANT adaptive challenge is always how to get enough food. Our ancient ancestors adapted to run down animals because it solved this major issue. They did not adapt to run explosive escape sprints, like many other animals, who

are constantly hunted by fast running predators. Instead of speed, we obtained endurance. The origins for endurance running might have been in scavenging. Faster and more enduring runners would have had the chance to get to the kills sooner than other scavengers. They were possibly already able to read natural signs, such as vultures flying towards the kill site. Later on human ancestors developed more sophisticated skills for tracking, which further enhanced their chances for catching their prey. Not any longer the prey had to be killed by someone else, rather they could choose an animal and track and run after it as long as the animal exhausted and stopped or even collapsed completely.

During this process the hunters adapted the skill to read natural signs, construct complex working hypotheses and sympathize with the tracked animal. As they focused intensively on tracking and the pursuit, the constant physical stress of running combined with hyperthermia and dehydration, and the hunter would begin to experience becoming one with the hunted animal. Occasionally the hunter would experience a full body multi-sensory hallucination of transforming into the animal. Finally the hunter loses himself completely and believes to be the hunted animal and pursues running as fast as he can to exhaust his prey. This process is carried on alongside the other members of the hunting group. This collaborative activity of intense running and negotiation of the interpretation of the spoor and acting out the animal's activity has undoubtedly been important and unifying experience for human culture.

Lewis-Williams suggests that the Upper Paleolithic humans had shamanic practices and ceremonies similar to other more recent hunter-gatherers. However, shamanism is a cultural practice with its roots somewhere else. Altered states experiences are in the very center of this sort of cultural practices. I have been extremely interested in finding out, whether there is something very deep in human evolutionary adaptations which could give us a clue if these experiences could have been a part of much earlier activities and experiences related to hunting.

Two million years ago our distant archaic *Homo* predecessors were still different from us. Their culture was completely different and we have no way of finding out what it was like. But the fossil record suggests that our physiology, from the neck down, was more or less similar. Endurance running was something that shaped their bodies and this quality has only enhanced in our own modern physiology. Therefore we might expect that the experiences they went through while running could have been a bit similar to our own.

The connection between the persistence hunting hypothesis (Carrier 1984; Bramble & Lieberman 2004) and the possible ramifications of its effects on human psychological development and its connections to visual culture have never been studied prior to this thesis. Louis Liebenberg (2013) is the only other scholar who has studied the connections of this ability and tracking related to the origins of scientific thinking and some other aspects of human behavior, including the notion that aspects of tracking might be visible in Upper Paleolithic rock art.

However, this book introduces a possible connection between persistence hunting and ancient and more recent rock art. It also tries to establish a connection with

the shamanic approach, which has evaded connections to hunting practices. In my view, ancient hunting practices, like tracking and running down animals, contained unexpected hallucinatory experiences and it was (and still is) more closely paired together with shamanism than often suggested.

Running of course was not something archaic *Homo* did only for the sake of fun, rather it was intertwined with scavenging and predation. Anything unusual they might have experienced during their long runs for their next meal might have been considered important. In my view, the experience of transforming into the hunted animal might have been extremely powerful and it would have been considered highly important.

We could suppose that humans always pursued animals whenever it was possible. This solution to adaptive challenges lasted for an extremely long time. Right until very recently persistence hunting was practiced in the Kalahari and maybe it is still practiced on skis in the Altai mountains. Louis Liebenberg (2006) has demonstrated that it was also a very efficient method, which might be the reason why it stood the test of time so well.

The rich archaeological evidence suggests that humans who inhabited the Blombos cave, and other similar sites on the Southern African coast, had much more complex cultural structures than any other human population before them. These people might have held the origins to image making. Prehistoric hunter-gatherers living outside Africa already had more complex hunting tools in their hands, but even they relied heavily on tracking. Hunting with atlatl might also result in a pursuit during which a fit hunters with good endurance would have a better chance of getting meat for their families.

The people who lived in the Southern African coastal areas might have already had shamanic ceremonies. I believe that the almost two million years of persistence hunting and tracking was such an important and crucial part of their mental lives that could have been a pivotal element in the formation of their shamanic practices. And to further elaborate on this idea, persistence hunting might have remained as a practical extension of their ceremonial behavior. This was also evident in the discussions I had with the Ju/'hoansi in the Nyae Nyae in Namibia (see Chapter 9). The boundaries between the hunting practices and the healing ceremony was more elusive than I had previously thought. The same elusiveness seem to applies to running practices of the Native Americans. Running was (and still is in some cultures) an extension of their ritual practices.

Therefore, we might suppose that if the Upper Paleolithic people would have had complex shamanic religions, this could have been part of their image making as Lewis-Williams suggests. However, the hunting practices, and altered states experiences connected to the practices, could have been more closely linked together with their ceremonial practices. The best evidence for shamanic approach is the widespread nature of shamanic practices, but ethnographic evidence shows that hunter-gatherer societies have always relied in tracking and even persistence hunting practices have been widely spread.

The shamanic approach is supported by the abstract symbols in Upper Paleolithic art which could be interpreted to have entoptic origins, but shamanic ceremonies are not the only way to induce entoptic hallucinations. One issue in the shamanic approach is claim is the fact that there are so many aspects missing from the Upper Paleolithic art which would link it to the shamanic hallucinatory visions, such as giant snakes and tiered cosmology with ladders and ropes connecting the supernatural worlds, if we omit the fact that caves themselves are like tunnels experienced in hallucinations. I am also aware that dark caves in general must have been extremely terrifying when you could not know if there were bears lurking in the shadows. This kind of terror in the dark would have been enough to inflict vivid hallucinations on their own.

The psychological impact of the Upper Paleolithic caves has received plenty of attention in the past. We cannot exclude their significance. However we also have to acknowledge the possibility that the paintings inside the caves was just one aspect of their visual culture. There are plenty of reasons to believe that the open rock faces were also decorated with images. Therefore we should not search for the origins for image making in the psychological impact of the caves themselves.

In my view, the proposed persistence hunting and tracking hypothesis should be taken under consideration. It has deep roots in the physiological evolution of our species and it could also be the very foundation for the shamanic ceremonies. Just like the shamanic approach, it is more clearly visible in southern African rock art, but also in Upper Paleolithic. Much of the rock art could be interpreted from this view of the persistence hunting hypothesis and we should be mindful of the metaphorical '*fragments of the hunt*'. The hunters adored large and fat animals and occasionally they pursued them until the animals became exhausted and gave their lives. In this process the hunter might have experienced hallucinatory experiences that he himself transformed into the animal. This might have been an extremely confusing and powerful experience. I have no doubt that this experience was considered a highly important part of the successful hunt.

THE PRESENCE OF half-human half-animal figures (therianthropes) is spread almost everywhere where rock art cultures have existed. The earliest examples of the therianthrope figures are also the earliest examples of image-making. The about 40,000 year old Lion Man of the Hohlenstein Stadel (Figs. 26–28) is currently the oldest dated evidence of representational “art” (Kind, et al. 2014). It was found in Southern Germany. The earliest dated (c. 37,000 years old) evidence (Pike et al. 2012) of representational cave art comes from the Chauvet Cave in Southern France which also has examples of therianthrope figures. The earliest dated (c. 26,500 years old) evidence of representational painting in Africa comes from the Apollo 11 Cave (Fig. 52) in southern Namibia and it also depicts a therianthrope (Wendt 1976, 6–7).

I BELIEVE IT is not plausible that the origins of the therianthrope illusions were in the ceremonial cultural practices of the early and more recent hunter-gatherers. It must have been tied to the oldest layer of their experiences integral to their ancient

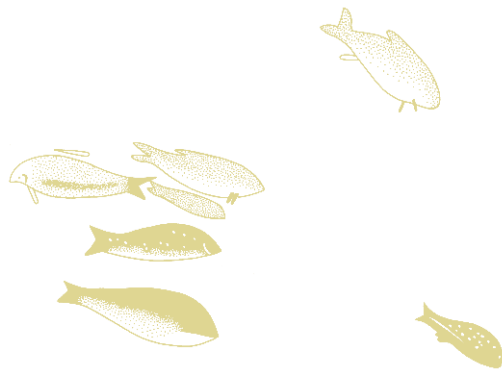
hunting practices such as tracking and persistence hunting. The hunters could have experienced this transformation when they were able to run down their prey. The physiology of the two million year old *Homo erectus* already bears the adaptations which also makes us endurance runners. The hallucinatory experience of transforming into the hunted animal might have been a huge part of their lives as long as they pursued animals on foot without weapons.

The persistence hunting and tracking hypothesis suggested in this study could explain the adoration of the vitality of the animals, tracks, blood spoor, running and flying animals, running humans, the absence of hunting tools, therianthropes, entoptic images, speared animals, nasal bleeds, and many of the small hints and fragments, which could be considered as metaphorical '*fragments of the hunt*'.

The proposed persistence hunting and tracking hypothesis does not explain how we became image makers, but it might explain the important and strong personal hallucinatory experience of becoming an animal which was probably believed to be part of the successful hunt. Even today the Ju/'hoan trackers of the Nyae Nyae believe, they must become the animal in order to catch it. In my view, a very powerful "*supernatural*" personal experience could explain why we had the original urge to make images to visualize and explain our inner emotions and experiences to others. If transformation into an animal was important for these hunters, but they had no way of showing nor seeing such a creature, the easiest way would have been to make an image of such a thing. This process and the ceremonies to inflict the same experiences could also have been the underlying process which led to ceremonial shamanic rituals.



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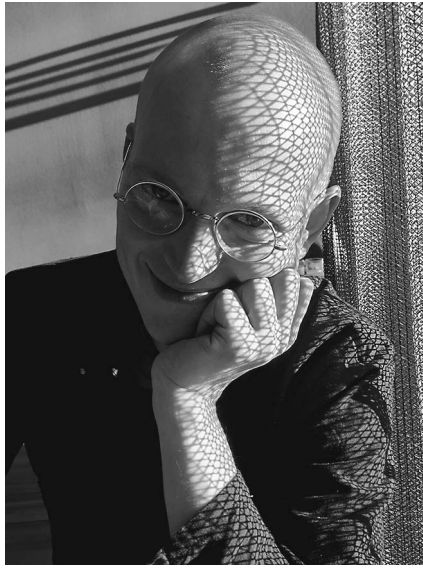
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Photo Maija Kaunismaa



Mikko Ijäs (born 1978 in Jyväskylä) is a Finnish media artist and researcher. Ijäs received his Masters of Arts degree from the photography department at the University of Arts and Design, Helsinki in 2006. His artworks have often dealt with difficult social issues through brutal irony and dark humor. He has also worked on digital media exploring new ways of presenting human visual experience through digital drawings and animations. Ijäs's artworks are represented in various collections and he has been exhibiting widely both in Finland and abroad. Together with his wife, composer Maija Kaunismaa, he has produced a documentary film titled "*The Origins*" reflecting his research on rock art and his explorations among the indigenous cultures in Africa and in Mexico.



Two million years ago, our ancestors were running down antelope on the African savanna. Instead of relying on complex weaponry, they relied on endurance and they chased their prey until it died. This process often derailed the hunters' consciousness into transformation hallucinations. Studying the last hunter-gatherers of the Kalahari Ijäs was able to establish a connection between the hallucinations, trance ceremonies, and the imagery depicted in rock art.

Ijäs claims that some of the earliest examples of visual depictions could be explained through the experiences of the persistence hunters. Ijäs has titled the visible evidence as the 'fragments of the hunt', which are not just depictions of hunting, but allegories, such as adoration of the animal's grace, transformation imagery, depictions of tracks, and images of running people.

In this multidisciplinary thesis Ijäs covers several fields of inquiry including psychology, archaeology, art history, ethnography and paleoanthropology.



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