INTO THE HEART OF EDEN

A naturalist scientist's journey into wildest Africa

Travel diary

Prof. Lee R. Berger

Authors note

I have lived in Africa now for almost fifteen years and have adopted the continent as my home. During this time, and due to the nature of my work, I have had the privilege of exploring some of the most remote and beautiful areas that are left on the planet. Part of the reason that I go to these most remote places is that they are often are the places where fossils are found, but what also attracts me to the farthest reaches of Africa is the possibility of finding and seeing other things that individuals before me have missed. And what I have found is that there are many things that have not been seen by others. This is not to say that others are less vigilant, or aware than I, its just that through good luck, and the good fortune of having many wonderful and talented teachers throughout my life, I have been taught to look at the natural world in a way that others possibly do not. I cannot look at an animal without seeing its evolutionary history, its ancestors and the complexity of its behaviour. When I examine a rock I envision its origins, where the material came from, how it was formed. When I look out upon a landscape, I try to envision its origins. How were the mountains or lowlands formed? When did the river incise the valley? As I walk through the bush, my eyes are more often

than not on the ground, scanning for stone tools or fossilized bone, and I enjoy nothing more than sharing this information with those that are with me on such trips. A close friend of mine once quipped that I might be responsible for the deaths of many game-rangers who have accompanied me, as instead of keeping their eyes on the surrounding bush looking for dangerous animals, they now looked down at the ground, looking for stone tools.

This travel diary is an attempt to share a bit of my vision of Africa with the reader. To look at the world through the eyes of a palaeoanthropologist and naturalist. It is also a chance to share with the reader an adventure into one of the last wild places on the planet. A place where not many, if any, humans have walked, at least in the last several thousand years. These type of remote places are extremely, and disappointingly, rare outside of the Artic and Antarctica and are in need of protection. It is my hope that by drawing attention to a wonderful wilderness area like Lanner Gorge in the Makuleke area of the Kruger National Park, that more effort will be made to preserve and protect such land for future generations, so that there will always be wild places on the planet.

1

Dawn in Eden, the First Day

As the diesel engine of the Landrover sputtered to a stop in the chill of the morning, I opened the door and glanced at the blue-white sky that is characteristic of dawn in the Pafuri Triangle of Northern Kruger. The weather forecast for the next week indicated cool and dry conditions setting in. Cool here at the edge of the tropics meaning lows at night in the mid to low teens and days in the high twenties. The important condition predicted by the South African Weather Bureau was *Dry*. Where we were

going, if it rained, we could end up in a dangerous situation of rising flood waters while trapped in Lanner Gorge, a situation I didn't want to contemplate as we lifted our heavy packs from the covered trailer of the Landrover. Having unpacked and packed again the night before, ensuring all the gear was evenly distributed by weight and importance I was confident that we were prepared for almost any eventuality that might arise in the week ahead. As I watched my team load and check their packs, joking among themselves, I felt the natural anxiety that comes at the beginning of any expedition into unexplored country. I had the added anxiety of being responsible not only for the planning and execution of this trip, but for the lives of my companions. Once we entered the Gorge, we were effectively out of contact with our support team and would be walking in one of the most remote areas of southern Africa, in conditions that we could only estimate from our previous excursions to the top of the Gorge, where we had looked down over three hundred meters into boulder fields and crocodile filled rapids.

Lanner Gorge had intrigued me for over half a year, ever since I had first come to the area of Northern Kruger known as the Pafuri Triangle in search of evidence of early humans in the region. Probably the most remote wilderness area of the great Kruger Park, the Pafuri Triangle immediately stole my heart and a bit of my soul with its raw wildness and incredible landscapes. It sits at the confluence of the once mighty Limpopo River and the smaller Luvuvhu River, their meeting point at Crooks corner forming a geographical triangle a point where three countries - South Africa, Zimbabwe and Mozambique meet. The name Crook's corner is derived from the habit of 19th century ivory poachers and other dislikable characters using the spot to easily cross from country to country and avoid prosecution by colonial authorities who still maintained some strange sense of diplomacy even in this remote corner of Africa.

The modern Limpopo, which forms the northern edge of the Pafuri, has its origins x kilomteres to the West on the border between Botswana and Zimbabwe. I was intimately familiar with this river as I had, several years before, spent months in remote areas of Botswana tracking the course of the ancient Limpopo which had once meandered across the centre of that arid country. In the past, the ancient Limpopo was one of the largest rivers Africa, and for that matter the World, has ever seen. A river that had its headwaters in the Angolan Highlands on the western edge of the African

continent and its mouth in the Indian Ocean x thousand kilometres to the East. Today, though, the Limpopo is not the might river it once was. Even if one is searching for *The Great Green Greasy Limpopo* that Kipling immortalized only a little more than a hundred years ago, you are not going to find it during the Winter in the Pafuri. Not only is it the dry season, but decades of water usage for crop irrigation, damming and general abuse by humans has reduced this once mighty waterway to a trickle, that at points is wadeable, although only at the risk of becoming a meal for one of the many hundreds of man-eating crocodiles that still inhabit the pools and deeper sections of the watercourse. And although there is the temptation to view these sometimes sluggish reptiles as innocent parts of the landscape, it is a mistake that has cost more than one person their life in this region as these crocodiles are practiced man-eaters. With the current disastrous political situation in Zimbabwe and the still present poverty and destabilization in Mozambique caused by decades of war instigated by South Africa, ironically modern South Africa is seen as the Mecca for refugees who risk life and limb to cross the Limpopo looking for a better world – and food. In the process, these refugees train the willing local crocodiles that humans are a readily available part of the menu. This makes any approach to the edge of the water a dangerous proposition as these truly ancient and powerful creatures view you as a potential meal.

Crocs were very much on my mind this morning as we checked our gear and settled the packs onto our shoulders in as comfortable a position as is possible for such heavy packs. I scanned the smooth surface of the Luvuvhu river for telltale swirls of motion. Wisps of mist floated close to the surface as the first morning sunrays struck its glass-like surface. Nothing moved, but this only added to my unease at the thought that we were almost certainly going to be faced with wading those waters in the very near future. The thought of crocs reminded me to check and load my rifle. My trusty 375 Holland and Holland had been on many expeditions with me and I loaded the 350 grain solids into the magazine, chambering and extracting each one to ensure its smooth fit before filling the magazine. In Africa, your life can depend on your rifle and I wasn't sure what sort of situations we might encounter over the next week. With four in the magazine and the bolt on an empty chamber I checked the ten additional rounds on my belt and turned my attention back to my team members.

We were not going up the Limpopo on this trip. My goal was to walk the entire East-West length of the remote and deep Lanner Gorge, a feat to my knowledge, that had never been achieved by at least modern peoples. Lanner Gorge had been incised by the Luvuvhu river as it gained power flowing over the escarpment to the East. I was aware that previous expeditions and individuals had made spot excursions into the Gorge, climbing down elephant and hippo trails at a few spots where faults had made accessible pathways down through the thick tropical vegetation and steep sandstone cliffs. Additionally, I was aware of one helicopter landing in the Gorge which had taken a group of explorers from *National Geographic* into a remote section to examine fruit bat caves along the southern side. While I had high hopes of finding these caves on our expedition, they would be of interest for another reason as we were looking for fossils and archaeological remains and they might be found in such shelters.

By my calculations, we had about eighteen kilometers to cover on this expedition from our intended drop off point near the mouth of the Gorge, to a last major cliff exposure on the northern edge of the Luvuvhu at the head of the Gorge. We would be walking "up river", that is, against the water flow. I had allocated five days to cover this relatively short distance. At that point we would reach a vast flood plain near a commercial tourist lodge called *Outpost*, and my plan from there was to walk about 25 kilometers back along the top of the Gorge to our present base camp. I hoped to accomplish this in a leisurely two days. Thus we had seven days planned for our expedition with three "emergency" days in reserve on the end. The big question was what was in between the mouth and head of the Gorge in those invisible eighteen kilometers. The maps only gave us a limited idea of what to expect.

I could see from the 1 in 50,000's, a type of scaled topographic map, that there were points where the sheer cliffs met the river, and these points would demand either a crossing of the Luvuvhu or a climb up the sides of the Gorge. I also realized that at any point we might reach an impassable place where either the wildlife, probably in the form of Crocs, or the shape of the Gorge itself could force us to turn back, or climb the sides of the Gorge, but this was just part of the risk that I was willing to take to gain access to this unexplored area. Additionally, I anticipated that we would only have about six or seven hours of hiking time each day once we entered the narrow parts of the Gorge

as we were bound to lose sunlight sometime in the early afternoon, depending on the cliff height in the area. During this brief period of daylight, I also wanted to accomplish some exploring and mapping. In these sort of situation, there is always the chance of finding something new, and in Africa the chance of finding good archaeological remains or fossils is always present. I already knew that there was the possibility of finding dinosaur fossils in the Gorge as I had found some remains in 200 million year old Jurassic aged sandstones on my trips along the top of the Gorge. Additionally primitive pre-dinosaurs had been discovered in the early 1990's on the southern side of the Gorge in slightly older Triassic sediments. Whatever other secrets the base of the Gorge contained would have to wait until we were inside.

We had begun that morning just before dawn, having a quick cup of coffee at the base camp. My staff and I stumbled around in the pre-dawn dark trying to get our gear loaded without waking the thirty or so students at our base camp which was on the edge of the Luvuvhu just a few kilometers up from Crook's corner. My plan for the morning was to move our party to the eastern mouth of the Gorge where we would begin our journey. This would save us an eight kilometere walk from our base-camp through big-five country. With our 25kg packs and assorted other gear I felt this was a prudent measure. This expedition was going to be self supporting, that is, we would carry all of our food and gear needed to support us for the entire potential period of the trip. I had chosen to carry South African army rations and each man carried seven ration packs, or Rat packs, in addition to his personal gear. The team gear was divided approximately equally by weight and bulk amongst us. I also carried a collapsible fishing rod and slingshot in case of an emergency need to supplement our basic diet. A blond bearded figure emerged out of the morning gloom. It was Jeff Jackson, a leading wildlife an old friend of mine from Georgia. I had known Jeff since I was a child growing up in the rural south. Through a sheer coincidence, Jeff had planned a trip to Africa needed a campsite for a group of students that he was leading and I had offered space near my Pafuri camp. So he was here this morning, camera in had, to see us off as we took our backpacks to the Landrover.

' Last picture of the intrepid explorers. I'll send a copy to your parents in case you're never seen again'

'Thanks. Your confidence is reassuring'

Conrad, the assistant base-camp manager and a rough ex-Rhodesian military man, efficiently if a little manically loaded our gang of six into a bush battered Landrover.

At times, all I could see was his feet and legs protruding from the covered back of the vehicle. Intelligible and unintelligible murmurs that were punctuated by brief bouts of profanity came from darkness of the storage area of the vehicle. 'That's it, that will fit there' he muttered to himself as he moved bags and equipment from one place to another. I turned to make sure all my companions were ready. With me on the expedition were five companions - Steve Churchill, Gary Van Rensburg, Pedro Boshoff, Stuart Miller and Godfrey Baloyi. The most senior was Steve, a longtime friend and colleague who was Chairman of the Department of Biological Anthropology and Anatomy at Duke University in the United States where I also held an academic post. A 45 year old, six foot two Virginian, Steve had a solid, good-nature and he and I had had conducted expeditions and excavations together throughout South Africa over the past seven years. We had met each other while completing our Ph.D.'s and had become fast friends ever since. Our work together surveying for fossils in the Free State and other parts of South Africa had given him quite a lots of experience and a "can do" attitude when it came to problem solving – a trait that I felt would put him in good stead on this expedition.

'You ready?' I asked as he tossed his bag to Conrad.

He pushed the bag into the waiting hands of Conrad, which, in an almost disembodied way, had mysteriously emerged from the recesses of the back of the Landrover to take the bag. 'Let's do it' Steve responded with a confident smile and a brotherly backslap.

'Where are Stuart and Pedro?' we all looked towards the tents for signs of life, or rather, two more or our team.

A tall , dark-haired, camouflaged figure came humping a green military pack through the centre of the still silent student tents 'Just a minute, I'm coming!' huffed Pedro. Pedro was a character who could only be described as a bit of a wild bushman mixed with some green beret. An ex-South African Army Lieutenant he was full of stories of surviving in the bush and other hair-raising experiences. Legend had it that he had once fallen almost half a kilometer and survived when his parachute had failed to open. 'Pedro's bounce!' he would often say. He was also a Masters student of

mine, studying fossil coprolites from early ape-man bearing sites around South Africa. Coprolites are fossil faeces, or the dung, of animals that were deposited in the caves hundreds of thousands if not millions of years ago. These remarkable bits of organic material sometimes get preserved and offer us an window into the type of animals that occupied the ancient caves and surrounds, and even occasionally give us a look at diet when the contents are examined. The downside to studying fossil dung is that it can lead to the application of several unflattering nicknames. In addition to being the team dung specialist, Pedro was also my climbing and caving expert for the expedition, with vast experience in deep underground caving and climbing around South Africa. Naturally, he was also an equipment junkie and I could tell by the way he handled his pack that he had added a few extra items.

'Here comes Poop Man' Steve quipped. Pedro grinned in response.

'Hey, crap can be fascinating! It important for….'

'Hold on Pedro' I interrupted. 'We'll do the coprolite lecture later. Right now we're wasting daylight so lets get loaded.'

'Right Sir' Pedro laughed, tossing his bag to Conrad who had again climbed into the middle of the trailer and was at that moment surrounded by bags and equipment. Conrad grunted as he took the pack, shooting Pedro a filthy look.

'What's in here ?' he asked as he manhandled the big green bag.

'stuff' Pedro curtly replied.

'Are you sure you can take the weight?' I asked, while watching the struggling Conrad shift the bag around.

'No problem'

I just shrugged. Pedro was tough.

As Pedro walked away, I looked down at his feet to make sure he was wearing boots. Pedro has a propensity for not wearing shoes under any circumstances, even in the bush. I had to order him to get a pair of hiking boots for this expedition. I was pleased to see a new pair of military issue brown boots, which I noted did look somewhat out of place on Pedro.

I looked for the fourth member of my team that had spent the night at this camp, 'where's Stuart' I asked, starting towards the camp. Just then a short, stocky figure burst from the area of the outdoor toilets.

'I'm here, I'm here' 'coming, coming!'

I watched as Stuart ran towards us, straps flying around his purple backpack and bits of equipment jangling from somewhere inside. In many ways Stuart was the biggest unknown for me. About five and a half feet tall, with glasses and light brown hair, Stuart had a cheerful personality and like many smaller individuals sometimes went out of the way to make himself the butt of jokes. Stuart was on the expedition because I had originally planned to take a photographer with me but at the last minute had he had backed out, so I was left with equipment for one additional man.

Stuart was a Masters student of mine who was working on *Ncuba* (pronounced TChuba) games. *Ncuba* is an ancient game a little like backgammon, that has been found in the Pafuri region carved in rocks and had been played by African people for thousands of years. Stuart had originally planned to be in the Pafuri while I went on the expedition in order to map the sites with the help of the fieldschool students, but complications had arisen and the mapping was going to be delayed about a week, so Stuart was left effectively free. Given that he was ex-military and seemed reasonably bush savvy, I had decided to let him come on the expedition only the week before.

I glanced at his feet and saw sandals.

'Sandals?'

"I forgot my boots when we made the early departure yesterday.' He said, shrugging his shoulders. 'I'll be fine.' I decided to let it go. Many South Africans wear a type of bush sandal on a permanent basis and get by perfectly well in the bush. The only place sandals might be a hindrance was if there was any technical climbing to be done. I would just have to leave him out of those activities.

Gary and Godfrey were going to meet us at the Scout Camp a few kilometers East of our campsite where they had spent the night. So with a last heave of Stuarts pack, we were ready to go and quickly loaded into the Landrover. Jeff gleefully snapped pictures as we departed.

'Good luck!' was the last thing he shouted as we moved down the track through the thick riverine bush.

Gary and Godfrey were ready and waiting for us when we arrived at the Scout Camp. The head ranger of the Kruger scouts was also there to wish us well on the journey as we hauled ourselves out of the Landrover to load Gary and Godfrey's gear. Gary was an obvious choice for the expedition. As the manager of the new private concession in the Pafuri for Wilderness Safaris, Gary had lived in a tented camp on the banks of the Luvuvhu river with his fiancé Candice for almost a year, acting as game manager for the entire region during the assessment phase of Wilderness Safari's programme. He probably new the area and wildlife as well as anyone. Short with curly mousy brown hair, Gary had an irrepressible good-nature and fine sense of humour. Additionally, he was also ex- South African military and his years of experience in the bush would be invaluable in the situations I anticipated finding ourselves in while in the Gorge. I had originally planned for Gary to carry the second gun on the trip, but a last minute problem had removed us of his 458 Winchester, leaving our party with only my rifle for defense.

Godfrey was a tall dark African and a member of the Makuleke tribe which owned this northern area of Kruger. In his early twenties, he was tall, thin and perpetually cheerful. I had met Godfrey on my previous visits to the area and had taken an immediate liking to this young man. He had a good sense of humor and was being trained to be a ranger once the Wilderness Makuleke concession was opened later this year. He was, however, the product of a disadvantaged background, coming from a displaced people who had been forcibly moved off of this land in the 1960's by the Apartheid government, in order to make a bigger and 'better' Kruger Park. If we succeeded on this expedition, it was likely that Godfrey would become the first Makuleke to ever traverse Lanner Gorge from East to West in its entirety. He was very much aware of the significance of the moment, having commented constantly to me the night before about the significance of coming back to his tribal land, 'his peoples land' as he frequently noted. I had a little bit of concern about his overall fitness given the weight of the packs and the unknown terrain. He also lacked as much bush experience as the others on the team. Godfrey was a typical product of the Apartheid village system and had spent

surprisingly little time in the bush. His enthusiasm and intelligence I felt would make up for a lot but I committed to myself to monitor him closely.

This morning Godfrey was full of enthusiasm as he approached the vehicle 'Yo! Professor Lee' ,as he walked up and gave me a high five.

'Are you ready?'

'Man I am ready!' He said with a smile. His enthusiasm was infectious and the whole team was grinning by now.

Gary walked up. 'Let's do this' he said as he loaded his bag into the now cramped trailer. 'I've been looking forward to this for months' he added as he pulled himself into the seat next to me.

'Good pre-honeymoon trip?' Gary was getting married just a week after our scheduled return.

'Candice told me she'd kill me if I broke my leg. Could you see me hobbling down the aisle with a leg in a cast?'

'How about if I brought you back without a leg? Croc bite and all. Candice would kill me!'

He slammed the door of the Landrover after he climbed in. 'Let's just keep all the bits and pieces intact.'

'Let's roll Conrad' I said as Conrad kicked the diesel to life. I looked out at the thick bush. I had a good team and the weather was fine. It all felt right.

2

The River

'Cross or climb?'

I didn't answer Gary's question immediately, only eyeing the sluggish brown water, then gazing up at the towering cliff. We could still here the sound of Conrad's Landrover receding in the distance and we had already encountered just the sort of situation I was hoping to avoid. The edge of the river on our side ended in a sheer cliff maybe a hundred meters wide. Its base encroached right

onto the river, the water at its base was deep and oily brown. To add to the problem, the Luvuvhu curved sharply to the right behind the cliff and out of site, so that we could not see what was on the other side of the cliff. The color of the water suggested significant depth at the base of the cliff making the thought of wading around the base of the cliff unappealing. That left two options – climb the cliff on our side of the river, or cross the crocodile infested river and hope for a better track on the other side. This was not the start of the expedition I had hoped for.

To make matters worse, there were a whole lot of reminders of why not to cross the river in the sand and mud at my feet. Dozens of elephant tracks crisscrossed the sandbar and great furrows had been ploughed into the bank where these giants had lumbered their way up the side, heading for the interior of the Pafuri triangle. We were clearly standing at the last crossing point of the elephant migration and the other side of the river was thick with bushes and tall grass that could hide these giants. But that's not what worried me most about crossing, for intermixed with the elephant tracks were the large splayed tracks of hippos and possibly even worse, the large, almost bird-like tracks of crocodiles, their long tail forming a neat bisecting line between their footprints. Big crocs had obviously used the bank as a sunning spot. By the width of the tracks, these crocodiles might go four meters or more.

My worries were justified. There are several good reasons to be afraid of hippos and crocs. Besides insects, whose disease carrying capabilities make them the most dreaded animal in all of Africa, the hippo and crocodile are the two biggest killers of humans on the continent (besides other humans of course). The hippo, or *Hippopotamus amphibius* as its known in scientific circles, is not a relative of the horse as its name would imply (its Linnaean name translates as "wide mouthed water horse"). It is in fact a distant relative of pigs, camels and antelopes. Being an Artiodactyle, that is having an even number of toes, the hippo belongs to an evolutionary lineage that includes other ungulates that either have the same number (four) or a reduced number, such as two, as is found in camels and antelopes. *Hippopotamus* is an ancient genus going back more than three million years in the South African fossil record and many of the fossils are put into the same species, *amphibius*, that we see to today. There were other species that existed in the past, including a giant form named *Hippopotamus gorgops*, but most went extinct as much as a hundred thousand years ago.

But today I was concerned with the modern species. A bull hippo can weigh as much as 2000kg and despite their bulk, can run on land as fast as 40km per hour. They often live in 'pods' comprising a dominant male and his harem. With a ferocious temper backed up by long sharp incisors the size and shape of a grass cutting sickle, the hippo is responsible for the most human deaths of any mammal in Africa. Possibly more than all other mammals combined. This is generally a result of encounters with boats and canoes where hippos have taken umbrage at a watery intrusion into their territory, but attacks also occur on land. When anyone or anything threatens a hippo on land, they run towards water, and anything or anyone that stands in their way is going to end up on the receiving end of more than a ton of angry animal with sharp teeth. Fortunately hippos typically only come out of the water for significant land sojourns at night where they can travel ten or more kilometers from water in search of the vast amounts of grass they require. I say typically, because hippos have been known to have the nasty habit of lying up in the middle of the day in thick grass well away from the water. I've seen them as much as four kilometers from water, in thick bush, during the heat of a summer day. But when they are in the water, you can usually see hippos if they are around. They often make loud honkings and snorts when they encounter humans, adding to their displeasure at being interrupted by showing their huge sharp teeth in an aggressive "yawning" display.

I didn't see any hippos where we were. Just the tracks that indicated that they were in the area. That didn't mean that there wasn't a pod of hippos around the blind corner at the base of the cliff, it just meant they weren't right in front of us. That wasn't necessarily true for crocodiles.

I have real respect for crocodiles. While hippos may kill more humans than all other mammals, crocs kill more people than all other large *animals* in Africa, maybe more than all snake and mammal attacks combined! Contemporaries of the dinosaurs and relatives of reptiles and birds, crocs are truly ancient with an evolutionary history going back more than 200 million years. While there are a number of species in the world, the one that I was concerned with standing on the banks of the Luvuvhu is *Crocodylus niloticus*, the Nile crocodile.

The Nile crocodile is an extraordinary reptile with adult specimens averaging around 5 m (16 ft.) but with rare specimens exceeding 6 m (20 ft.). Adults of both sexes may easily exceed 225 kg (500

lb.) and some exceptional specimens may reach 1000 kg (2000 lbs). It is unknown exactly how long crocodiles live in the wild but they may exceed 80 years in age. Crocodiles mainly subsist on fish but their prey will include any animal that ventures to close to the water, including, of course, humans. The females nest on sandy shorelines, dry stream beds, or riverbanks. A female can lay 25 to 100 eggs, which she covers with sand, then guards them until they hatch approximately 3 months later. Crocodiles are surprisingly good parents and when hatching, either parent may assist the young to escape from their eggs by rolling them between their tongue and palate. When in danger, an adult female crocodile may even hold young crocodiles in her throat pouch for protection.

I was all to aware that not only was there a crocodile nesting site just down the river from where we were standing and I certainly had no desire to test the protective nature of a parent crocodile. Additionally, I was certain that the crocs in the Luvuvhu were potential man-eaters, probably having encountered refugees attempting to cross the river from Zimbabwe and Mozambique. If crocodiles are not used to feeding on mammals, they can be relatively shy of humans. Many years before, as a student I had frequently swum on the eastern side of Lake Turkana in Northern Kenya while at Richard Leakey's Koobi Fora camp. In the lake were enormous crocodiles but I had little fear of being eaten. The crocs on the eastern side of the Lake ate mainly fish and thus didn't view humans as being on the menu. Interestingly, on the western side of the lake, if you put your big toe in the water you had a very good chance of it, and probably a larger part of your anatomy, being bitten off. There, the crocs encountered humans, cattle and other mammals on a daily basis and all of them were very much on the menu. The eastern Turkana crocs were not man-eaters and the westerners were. I was pretty sure I knew which category the Luvuvhu crocs fell into. Not seeing crocs in the water in front of me was no guarantee that they weren't there. In fact, it often meant just the opposite.

But there was still that climb to think off. Could we even make it? The edge of the cliff was fairly steep but we did have about 50 meters of rope and the necessary equipment. The issue was really what was on the other side of the cliff where the river disappeared around the right hand bend. The map was of little help. It didn't even show this cliff. What worried me was that if the river was meandering back towards our side, it had probably cut into the cliff and there was going to be just a sheer wall and no way to get down. That possibility, when combined with the fact that the map

showed the river cutting back away from our side just a kilometre upriver meant that going up might be an entirely wasted effort and we would have to climb back down and cross the river anyway. On the other hand. Crossing the hundred or so meters of river held the very real chance of bumping into a croc in the sluggish, deeper water. The good thing about the crossing option was that I could see that about seventy five percent of the crossing would be in water that was only about thigh deep and we could see the bottom in those parts, making the approach by a crocodile difficult. It was that murky, deeper water that worried me.

'You know I once found a crocodile skull that had washed down out of the Gorge that was this big' It was Gary interrupting my reverie, holding his hands out about twice the width of his body.

'really?'

'Sure, must have been from a huge croc, maybe six or seven meters'

'Thanks for the info' I said, not really appreciating Gary's historical information at that exact moment.

I turned to the rest of the group. 'I think we cross' explaining my reasoning given the cliff and the meandering river. All of them nodded. Nervous banter broke out as we all dropped our packs and began to untie our hiking boots. Only Stuart, with just sandals on, would wade this time with shoes on. There actually might be advantages to packing a pair of sandals after all.

'Okay, here's how this is going to go' I addressed the group after all boots were off and tied to our packs. 'I suspect the water will be at worst waist deep about where that fast but murky water is. We'll stay as a close group, trying to look like a big animal crossing. I'll take the front, slightly downstream with the rifle ready in case any big nasties come after us.' I loaded a round into the chamber of my rifle and put the safety on half-cock, and with that we started our first crossing of the Luvuvhu.

Like most people I hate not being able to see into murky water that I'm wading or swimming in. We primates are almost completely visual animals. With an appallingly poor sense of smell and mediocre hearing relative to most mammals, we rely on our binocular vision, big brains and group structure - lots of eyes - to alert us to danger. But when we move into water we lose almost all of our evolutionary advantages, we our truly out of our element. Any advantages we might have had on

land are removed. Its why we are most afraid of animals like sharks when our heads our out of the water and we are paddling about in the ocean. There is no sense of smell, no sound and we've lost our visual capabilities that we are so dependent on.

But I know that some individuals and even some scientists have supported the so-called "Aquatic Ape" hypothesis, the seminal ideas for which were first put forward in 1923 by Max Westerhofer. Westerhofer suggested that many of modern humans morphological features pointed to an aquatic origin. Later, in 1956, these ideas were synthesized by the British marine biologist Sir Alister Hardy. But the real champion of the theory, and the person who carried the Aquatic Ape hypothesis into the popular arena, was Elaine Morgan.

In brief the Aquatic Ape hypothesis puts forward the idea that at an early phase of hominoid evolution (around 5 million years ago according to Morgan), the proto-hominins (pre-bipedal apes) went through an aquatic dependant stage of evolution where, through the stresses of this lifestyle, many of the characters apparently unique to living humans evolved. The Aquatic ape hypothesis as supported by Morgan, points to such features felt to be unique to humans, particularly in all being found in one animal. These include bipedalism, our near nakedness, our body fat distribution, our elongated lower limbs, which are in fact good for swimming, voluntary breath control, the diving response, where the human heart rate may be reduced by more than three-quarters during sustained submersion, the comfort of newborn humans in water, the gross fatness of our young at birth as compared to those of other ape offspring who are born skinny, and even our large brains.

Supporters of the Aquatic Ape hypothesis have, both deservedly and undeservedly, become the "bad boys (and girls)" of paleoanthropology. Aquatic Ape propagandists have a hard time getting a place at the podium of most scientific meetings and usually (rightly) cry foul at the outright rejection of their manuscripts, typically citing personality clashes as opposed to *bona-fide* scientific reasoning behind most rejections. Having been on the organizing committees of symposia (one that in fact had an Aquatic Ape section), it may well be that rejection is in part due to the style of presentation of many of its proponents. But to be fair to myself and my colleagues, for the most part we find the Aquatic Ape theory simply too broad in its scope to be considered a scientific hypothesis: one might call it an "umbrella" hypothesis. Umbrella hypotheses typically try to lump a variety of characteristics

(the absence of hair, fat distribution etc.in the case of the Aquatic Ape) under one single overarching evolutionary adaptive breakthrough. Umbrella hypotheses are usually extremely hard to disprove as they are generally easily communicable, simple ideas that are comprised of a large variety of component ideas, some testable and some not.

In short, although attractive and intriguing (one cannot help but conjure a pleasant vision of australopithecines wading through mangrove swamps picking up tasty titbits from the shallows five million years ago), the Aquatic Ape hypothesis is clearly a model in need of some severe refinement as for the most part it is contrary to the most biological *and* paleontological evidence.

As a few cases in point, the fossil record of early hominins show that we are not descendant from terrestrial quadrupedal apes, but from climbing and or brachiating apes living in tropical to sub-tropical woodlands, leading to arboreal origins of bipedalism being far more probable. The elongated lower limb that so differentiates our genus from that of the early australopithecines and other apes, does not appear in the fossil record until after 2.5 million years ago, well short of the 5 million year hypothesized point of origin of the supposed aquatic behaviour.

In fact, adaptive aspects of our post-cranial morphology have evolved at different times throughout our evolution. Voluntary breath control, where we, like many marine mammals, can exercise control of our breathing independent from our gait may well be a simple factor of being bipedal, because our thorax and upper limbs are not involved in breathing. The comfort of our newborns in water is not so surprising for a creature that has just spent nine months immersed in a fluid, and certainly other nonhuman mammals respond the same way. Other core arguments of the aquatic ape hypothesis, such as our relative nakedness and subcutaneous body fat don't stand up to close scrutiny. We are in fact only slightly less hairy than our close relatives the chimpanzees and gorillas, who are themselves much less hairy than other mammals (humans have finer and shorter hairs which gives us the appearance of being naked). And all other semi-aquatic mammals, like the sea otter, retain their dense hairiness. It is only completely aquatic mammals that have lost all of their hair. Without going on and on, in a case by case refutation which would be better served elsewhere, even our distribution of body fat is not like that of an insulated marine mammal, it's distribution is

patchy and is not positioned in places efficient for protecting against heat loss in an aquatic environment.

Added to that, of course, is the very real dangers to primates like ourselves in African waters. A realization that was becoming very apparent to me as the depth increased to just above my waistline. Being the shortest in the group, Gary and Stuart were having the toughest time of it. At times, the water was reaching their chests and the bottom of their backpacks were getting soaked. The tension was extremely high as we tried to move through this deeper section as fast as possible while still keeping together. I watched the water closely for any tell-tale shadows or a wake that might represent a large, moving shape underwater. Fortunately, nothing appeared and we all emerged on the far side of the river unscathed, but with a considerable amount of adrenaline running through our systems.

It's a strange thing but just how even a relatively easy river crossing, when combined with the stress of imminent danger can exhaust you. Everyone just sat down on the bank of the river, gazing back at the water we had just crossed.

'We made the right decision' Steve pointed out, indicating the far shore. He was right, we had made the correct decision. The river did angle back towards the opposite shore, creating a massive cliff that ran several hundred meters upriver until the next meander. If we had climbed, we would have been forced to climb right back down as we would have been trapped on a high cliff face with nowhere to go. The first crossing decision was the right one.

After cleaning the sand off our feet and putting our boots and socks back on we inspected the water damage. Gary had suffered the worst. He had his sleeping bag in the bottom of his bag instead of on top. It, and his bedroll, were soaked. We all agreed that we'd re-organize our packs when we stopped for breakfast in a couple of hours, but we needed to make some forward progress instead of lateral progress or this was going to be a very long trip. I unloaded the bullet from the chamber, reseating it in the magazine.

Walking along the banks of the Luvuvhu elephant and buffalo sign were everywhere. This was clearly a bottleneck point for animals coming up from Kruger Park into the Pafuri, or down into the park from the Pafuri, Mozambique and Zimbabwe. The grass and bush was thick and there were

some nasty grass seeds that were working there way into our socks. The ground was gravely and undulating, making walking slow, but at least we were making forward progress. The area was a sort of mini flood plain and we worked our way forward carefully, watching for animals ahead of us. Across the river, the bank was a series of hills and cliffs and it was clear that this side was the better route, but I was keeping a close lookout for dangerous animals. The last thing I wanted to do was surprise an animal at close range. I encouraged the guys to talk as much as they wanted, this would give any animals plenty of time to know we were coming and move out of the way. Its just another simple way of preventing a problem encounter with a dangerous animal from occurring and in these situations any ounce of prevention is worth more than a pound of cure.

That African animals can be dangerous seems manifest, nevertheless, the monumental stupidity of some individuals who encounter dangerous African animals never ceases to astound me. While there are unfortunately some professional guides and experienced individuals who promote a culture, largely through television, that wild animals such as lions and elephants may be approached much as one would approach a large house cat or a Jersey cow, the vast majority of persons who have spent any significant time in the bush understand that this is both a foolhardy and dangerous attitude that is bound to get either you or the animal killed.

Just a few weeks before our expedition began an experienced ecologist in a private reserve in the South of Kruger illustrated just how deadly and unpredictable African animals can be - even to an experienced person. The experienced woman had been the ecologist for a well known private game reserve for more than x years. During this time, she had plenty of close encounters with any number of dangerous animals including lions, elephants and buffalo. A couple of years ago, I had the chance to walk in the bush with her and found her to be knowledgeable and appreciative of her surroundings. One of those individuals that you often meet in Africa that has dedicated their lives to the conservation of this magnificent continent. But even with all of that experience, one small mistake had cost her life. A group of cow elephants had been approaching camp and she went out to scare them off by clapping her hands and shouting. This tactic at first worked, as it probably had dozens of times before for her, but on this occasion things went terribly wrong. After moving off a short distance one of the cows came charging back. She tried to escape by running, but the cow was now intent on

killing her. Battering her, then picking her up and moving with her into thick bush the elephant, proceeded to trample the life from her. Arriving rangers at first couldn't shoot the cow for fear of hitting her, but then, after getting a clean shot in, the animal ran off, to be dispatched a short while later. But it had been too late for the ecologist, the cow had killed her. A stiff reminder to those of us who get complacent in the African bush that this truly is a tough continent filled with tough animals.

Given the conditions, after about an hour on the floodplain we had made good progress of about a kilometre and a half. The sun was now well up and the temperature was beginning to rise. Ahead of us, I could see two hills indicating that we were heading for another choke point of the river. I decided to stop and orientate ourselves against the GPS and the map.

Pulling the map from its folder I handed the 1:50,000 scale topographic map to Pedro and Godfrey who eagerly went about locating our exact position on the map. By my estimation, we had travelled about three kilometres in total, but clearly the easiest three of the expedition. According to the map, the two hills ahead should guard a much smaller floodplain than the one we were on and it was possible that this floodplain would be blocked from access by larger animals unless they chose to wade through the river between the two prominences.

'We're here.' 'Pedro said pointing to a spot on the map about two and a half kilometres from our starting point.

It had only taken a couple of minutes for Pedro and Godfrey to locate our exact position, within a few meters of where I had thought we were on the map. This was one of the wonders of using GPS in the bush. There was no longer any estimation of our position, which significantly increases safety in the bush and reduces the chance of getting lost.

While Pedro and Godfrey began an orientation exercise with the compass to re-confirm our position – batteries don't last forever after all – I gathered the others around the map to discuss our plans.

'We have these two hills to contend with up ahead' I said, pointing at the closely packed contour lines and then gesturing upriver at the actual structures. 'I'm hoping that we can cross here' pointing at a flat area of the river below the right hand hill, and if we're lucky, there will be a small

beach around the edge of the northern hill. The southern one is going to be bad. You can see by the contours.'

'And if there's no beach?' Stuart asked.

'We climb.'

I could see everyone calculating what that would mean as they tried to estimate the steepness of the two hills.

'Which one would we climb?'

'We'll see when we get there'

Even though there was a crocodile right I front of us the second crossing was much less stressful than the first. The croc was about a meter long. A juvenile and harmless to us. Its presence made me pretty sure that there were no really big crocs in the immediate vicinity or this little one would be on the lunch menu. Crocs are not sensitive about cannibalism. It also turned out that we were forced to cross. Debris from huge floods that had ripped through this area in 2000 had made the southern edge of the river rough going. Climbing over fallen logs is no fun in heavy packs. The northern side of the river looked more inviting, with a level beach about 10 meters wide.

The river itself was also easier to cross at this point. Because of the flood plain, it had widened out and thus was shallower across the whole 120 meters. Additionally, the two hills, which were now only a few hundred meters ahead of us, created a pinching effect on the river, accelerating the speed of the water for a few hundred meters downstream just in front of us. This meant that there were fewer deep spots. This also meant fewer spots for big nasties to hide in.

Nevertheless, we took the same precautions as before. Surprisingly, the little croc let us get almost halfway across before scurrying into the river and disappearing in the clear water.

'pretty amazing how they can just vanish in clear water' It was Gary again, just fuelling my paranoia about crocs by stating the obvious.

Everyone's attention was, however, refocused on the water around us, which only came to the waist of our shorter members. I fingered the safety of the rifle in a nervous gesture.

As we reached the opposite shore, I took the opportunity of the angle and safer situation to assess the base of the hills ahead. The southern side looked like a no-go as the map had predicted.

The river had clearly cut right up against the base of the prominence and slow sluggish water where it met the cliff seemed to indicate great depth. The North side however, looked more promising, faster water at the base might indicate a potentially shallow crossing. There was however no beach at the base.

After reaching the other side we started up the large sandbar. For the first time we began to get the sense of the Gorge ahead as the hills on either side began to close in on the river. I glanced at my watch. Nine in the morning. We had used about two and a half hours and covered just over two and a half kilometres.

'Let's have a breakfast break here and I'll take a look ahead.'

Rat packs were pulled from the backpacks as Gary unrolled his soggy sleeping bag and bedroll, laying them out in the sun in an attempt to dry them. I was a little worried that the material wouldn't dry completely by this evening. If it didn't we could be in for a bit of a problem this evening. Temperatures could drop surprisingly in these sub-tropical desert areas once the sun went down.

Those of us who had not served in the South African military – namely Steve, Godfrey and myself - eagerly opened our brown cardboard, plastic covered Rat pack boxes. The other three, all of who had been conscripts in the old South African army at a time when any white male was forced to serve under the Apartheid regime, opened the boxes with somewhat less enthusiasm. I would soon learn why. The contents of Rat packs would become a running joke during the expedition.

In a box about ten by eight centimetres was contained everything a soldier in the field would theoretically need to survive for a twenty four hour period. Each box was labelled 1,2,3,4 or 5, theoretically indicating the day in which a particular meal was to be consumed and thus assuring variety in the diet of a soldier in the field. Variety for the modern South African armed services, it turns out, consists of exactly the same meals every day with the exception of one of the two tins, the chance of one of two flavours of powdered citrus energy drink – orange and lime – and the chance of one of four dehydrated "breakfast porridges" – regular, strawberry, vanilla, chocolate and banana. A couple of other variable treats like "milkshake" – vanilla, strawberry or banana, and the rare chance of a strawberry or orange "super-C", a sort of sugary vitamin c drop in a small roll.

The remainder of the pack contained an assortment of useful items. A three pack of hard looking biscuits that were called "dog biscuits' by my three companions in the know. Processed cheese in a squeeze tube. Numerous small sachets of salt, pepper, coffee creamer but no coffee, two little tea sachets, chutney in a little squeeze pack like you find ketchup coming in at fast food restaurants, a military tin opener, paper napkins, about half a dozen "fuel tabs" that were meant to heat the enclosed tins, and a pack of long skinny plastic bags that I was told were called "condoms", meant for mixing the energy drinks and milkshakes.

Gary eagerly demonstrated the efficiency of these little items by filling one with an orange energy drink pack, adding water into the 12 centimetre clear plastic bag, twisting the top close and shaking the contents vigorously. He then nipped the bottom corner of the bag and sucked the contents out. Nifty trick.

The two tins in the Rat pack, one rectangular and one cylindrical, were where the real variety of the Rat pack would theoretically come. Our anticipation of this veritable feast of variety was, however, short lived as we pulled out our boxes. Pedro was busy decanting all of his packs into a loose heap. Evidently an old army trick designed to find the best contents first. The rest of us were going with the gods of luck.

'I'll take day three'

'I'll do two'

'I'm going with five' Godfrey grinned, enthusiastically looking for his "Day 5" box. Steve pulled "Day 4" out, leaving me with the box labelled with a big red "1" on the side. My rectangular tin had something called "bully beef", I had visions in my mind of lovely corned beef from my childhood. The cylindrical tin held "spaghetti and boerewors", literally translated to "spaghetti and farmers sausage", that didn't seem to bad.

'what do you have'

'bully beef and chilli con carne' Gary said, looking dubiously at the light purple lettering on the cylindrical can.

'bully beef and curry' Godfrey noted with some satisfaction.

'bully beef and mixed vegetables' Stuart, looking a bit startled that a South African meal might contain something other than meat. I was starting to see the pattern in the Rat packs.

'bully beef and curried chicken' Steve noted with an expression that was hard to read. Pedro remained silent , pouring over his pile of opened Rat packs. So bully beef everyday it was going to be.

I mulled over the contents. What to eat first? The porridge at breakfast? Bully beef?

Each of us chose our own route. I decided to go all the way and opened a tin of bully beef. Inside was a rather greasy looking lump of pink meat with congealed fat around the edges. Inside this attractive exterior were bits and pieces of unidentifiable former animal parts.

Stuart looked across at me, 'yum, looks good' with not a small amount of sarcasm.

'I love bully beef' I said with conviction. I had, after all, chosen to go with military Rat packs for their efficiency. I was determined to put on a good game face.

Using my handy tool that has a knife, fork and spoon all in one I dug into the mystery meat contained in my bully beef can. Not too bad was my verdict. I watched the others choosing different items and tucking in. The banter was upbeat and discussions ranged around a variety of topics typical to a group of men in the bush. It really is amazing what fresh air, exercise and being in the outdoors would do for an appetite and enthusiasm. The group was merging into a cohesive team and there didn't seem to be any problems with personalities. I couldn't help but grin. It had been a good start.

3

Up and Down

I eased myself around the corner of the ledge. Cold water lapped at my thighs as I held the rifle pointed towards the dark depths in front of me. Glancing quickly ahead I tried to get a glimpse of what lay around the corner of the hill. I had waded out into the river about ten meters, hugging the side of the hill. There was clearly deep water in front of me. I was hoping to find that we could wade around the base of the hill instead of climbing. Climbing looked rough, there was a steep gully on our side of the river, full of thick vegetation, that looked marginally passable. The hill on the other side of the river looked a little less steep with a fault having cut a small valley up the side of the hundred

meter high outcrop. But climbing was going to be tough either way and I had high hopes for a quick wade around the base of the hill on our side.

Easing my head around the corner of the cliff I snatched a look ahead, only taking my eyes off the water around me for a second.

'Damn' I whispered back to my companions, who were all standing on the beach at the edge of the water behind me, eagerly willing an easy crossing report from me.

'Crocs'

Two big ones in fact. Lying on a sandbar just forty meters in front of me at the edge of the base of the hill. The smaller one was about three and a half meters, the bigger maybe five. There would be no going this way. I started backing up slowly, keeping an eye on these two while glancing nervously around me into the darker parts of the deeper water at might feet. If there were two, there were probably more.

On my first backward step, first the small one, then the larger slid quickly into the water, their heads on the surface for a couple of seconds before first one, then the other disappeared from site.

I backpedaled quickly to the shore.

'We're not going that way' I told my companions, outlining what I had seen.

'Then its up'

We all went back down the beach to re-group and reconsider our options. I looked at the two hills. The one directly above us and the one across the river, trying to weigh up which was the better option.

'I couldn't see what the other side of this hill looked like' I voiced my concern that we would climb this hill and find a vertical cliff on the other side above the croc beach. 'Also, I couldn't tell whether the beach the crocs were on ended at the next corner about 500 meters up or whether it went around.'

The map didn't help much. It showed just another meander on our side, with a hill that approached very close to the water.

Steve stood up from the map and gestured at the other side of the river 'On the other hand we can see the other side.". I looked across at the other hill. It just might be a little less steep that the one

we were on. Added to that was that we could see a large floodplain about two hundred meters up and the back of that hill did seem to slope down into a valley of sorts.

'Ok, we go back across and up the other side'

We crossed a few hundred meters downstream from where we had crossed previously. I was a little more wary this time, not having seen our two big friends come to the surface. Our small friend, the meter long croc, was still in the same position. He slowly submerged as we entered the river, again disappearing instantly from sight in the clear, shallow water.

Back on the other side of the river we approached the base of the hill and the small fault that cut upwards towards the peak. It looked tough from close up. The fault rose at an angle of about forty-five degrees and it looked like the peak was about a hundred meters above us. For the first thirty meters or so there was a boulder field. Small and large sandstone rocks that had fallen from the crest of the hill. The biggest were about two meters in diameter, most were half a meter or so. After that, the cut was filled with thick vegetation and we couldn't see what the ground looked like from that point onward. The one encouraging sign was that there were some hippo tracks that seemed to head up into the boulder field.

Gary stood beside me, looking at the trucks 'If he could make it we can'. I nodded in silent agreement. It really looked tough. I re-adjusted my pack. The straps were beginning to bite into my shoulders and suddenly it seemed a lot heavier than it had just a few minutes before. I checked the chamber of my rifle, making sure it was empty. I turned to the others, 'Lets do this'. Pulling the sling over my shoulder I started up.

It was tough going. The boulders alone were difficult to navigate. For anyone who has never climbed over a boulder field, even a small one like this, might find it hard to appreciate how hard it is to clamber over even a meter high rock lying on an incline. You have to test the security of each and every rock under your feet to make sure its solidly in place, then haul yourself up and over the rock ahead, scrabbling with your feet for a foothold to push up with. Add a 25kg pack to the mix and 6kg rifle that you don't want to smash and the going is hard. I reached the top of the boulder field and looked back at my comrades. Everyone was surprisingly silent, concentrating on the effort of pulling themselves and their equipment up the steep incline, in and around the boulders.

After a short breather I turned to the vegetation. It looked passable. A thick tangle of different vines and weeds with the occasional oddly angled tree clinging precariously to the slope. Pushing my way in I met the first of series of obstacles. Everything here seemed to have thorns. They grabbed at my arms, chest and legs. Worst of all, they grabbed at the pack on my back where I couldn't reach them, requiring me to just bull my way through the tangle. Added to this was my first encounter with a particularly nasty latex bearing plant that I would become very familiar with on this expedition. The plant was a vine of sorts that I had seen in the bush before and that I knew to be poisonous when ingested. It was a bright olive green in color and its straw like stems created a complex tangle that was difficult to pull through. Although it was a soft plant, almost like a succulent, its stems were strangely brittle, breaking off easily when you touched them. When they broke, they began oozing a white sticky latex like substance.

'That's deadly poisonous' Gary huffed from behind me as I gingerly pushed a mass of branches out of my way.

'I know. Warn the others'

What I didn't know about this lovely plant was that the latex also burned like hell when it got on your skin. By the time I was three quarters of the way up I was covered in a gooey sticky mess from breaking trail and itching wherever I had exposed skin. I stopped at a ledge and waited for everyone to catch up. We were all out of breath from the exertion. I checked my watch which also had an altimeter on it. It had taken us nearly thirty minutes to cover just seventy five meters in vertical altitude.

We rested for a few moments as a group, no one saying much, before pushing on to the top. Fifteen minutes later we reached the crest of the hill and level ground. The top was comprised of a rounded sandstone boulder and we actually found ourselves at the terminus of a large game trail running about ten meters below the peak. The trail was filled with the spoor of elephant and buffalo.

Dropping my pack, Gary, Steve and I walked to the very top of the hill overlooking the river to scan the way ahead. We found ourselves in a magnificent spot. A hundred and ten meters above the river standing on the edge of a vertical cliff, we had a clear view of the valley ahead for at least a kilometre. It was breathtaking. The river meandered back towards us as it crossed through the gap.

A magnificent floodplain then opened up on our side of the river. Across from us the beach that I had seen the crocs on ran for about eight hundred meters before it turned gently to the right, out of our vision. The landscape was dotted with giant leadwood trees and flood debris. The valley on either side was steep but vegetation covered, increasing in height to one hundred and fifty or two hundred meters upriver. I took a seat, struck silent in awe of the beauty. Steve walked up beside me. 'We may have made the wrong decision'

Steve was probably right. I looked across the river at the other side. The hill that we had breakfast below went up much like ours but ended at maybe seventy five meters, well below where we now sat. It immediately met a gentle slope on the other side that crossed down to the beach where the crocodiles had lain. From that point on the beach was wide and clear until it vanished around the corner ahead. It would have been a simple stroll.

'Well, we wouldn't have had the view' Gary pointed out.

'No we wouldn't have' I agreed.

Back with the others a few minutes later I assessed the situation. The climb had been tougher on everyone than I had anticipated. We had used up more than four hours of our day and had only covered about two and a half kilometres of what was probably the easiest part of our trip. I poured over the map, trying to discern what was ahead.

'We must get to here by late afternoon' I said indicating a point on the map about two kilometres from our present position. It was the beginning of what looked like the true start of Lanner Gorge. On the 1:50,000 the valley walls converged sharply together, the altitude of the sides increased dramatically and the whole Gorge narrowed to maybe sixty or seventy meters in width. There were two high peaks indicated at the beginning.

I tapped the steep contour lines of the two highest points, 'This is where I think its going to get tough and I want some daylight to scout ahead, to see what we are in for in the days ahead.'

I was also silently worried about finding a good campsite before we lost light. As we went further up the Gorge, we would lose daylight earlier and earlier as the towering cliffs would undoubtedly cut out our view of the sun, maybe by as early as one or two in the afternoon. The dropping visibility and decreasing temperatures were only part of my worry when this happened.

The bigger worry was that the nocturnal animals might start moving in the valley at that time and I didn't know what animals those might be. Hippos certainly, leopards probably. Would there be lions, elephants and buffalo? That all depended on the terrain and whether they could get in to the Gorge. All of this meant that we would have to pick our campsite carefully, and to do that we needed all the daylight I could gain.

4

The Pillars of Hercules

'Let's take the elephant trail. If they can get up, we can get down.'

Thirty minutes later I was having second thoughts about that statement as I clung to a branch, my feet dangling almost vertically attempting to lower myself to the dubiously clear ground half a meter below. I heard a sharp curse behind and above me as rocks and loose soil skittered down the hill around me. We were descending down the "elephant trail"- if it could be called that – that had begun at the top of the hill. Well, it had to be called that as it was covered in large elephant spoor and there were huge heaps of fresh elephant dung every dozen or so meters, but how they came up or down this steep treacherous path was anyone's guess.

'How do they do this?' I grunted out loud, addressing the question in the direction of Steve and Gary who were struggling just behind me.

'They shouldn't be able to' Steve huffed in reply. 'They're too big'

He was right. The sheer physics of an elephant shouldn't allow it to go down a gradient as great as this. We were probably climbing at an angle of more than forty five or fifty degrees. There was simply no way that an animal with a mass of four tons or so and that was two or three meters tall could come down here, it was anatomically impossible, It was almost impossible for us. But there were their prints to prove that they were unaware of the physics texts we had read.

I dodged a rock about the size of a basketball that tumbled down the hill, kicked loose by one of the others struggling above us. 'When I get back to Duke I'm going to do a study on this. Figure out how they do this.' Steve puffed as more loose rocks skidded around us. The trail meandered back and forth down the hill. It was certainly farther down into the next valley than it had been going up.

Gary joined us where we had stopped to catch our breath 'I once watched a group of elephants come down one of the steep hills downriver from us' . He pulled his pack from his shoulders and looked back up the trail.

'It wasn't quite this steep, but close.' A group of cows and calves came over the top of a hill and began working their way down. It took them about two hours to cover maybe two hundred meters. They really took their time'

'Where were you?'

'There were three of us, right at the bottom. When the first cow got about fifty meters from the base of the hill she smelled us and turned and ran back up in about two minutes. Took the whole herd with her. We felt terrible. You could here the group calling to elephants on our side the rest of the night.' He shook his head. We could all sympathise with those elephants. It would be a bugger to climb back up a hill like this.

Just the day before I had watched a magnificent herd of elephants cross the Luvuvhu near our camp. They were refugees of sorts. Commercial hunting is allowed across the river in Zimbabwe and this was one of the first herds coming down to the winter feeding grounds of the Pafuri, and they were in a hurry. Young calves struggling in the water, cows trumpeting and nervously looking around for signs of danger. They were clearly being put under stress to the north, probably from a combination of poaching and "legal" hunting.

As I watch them cross the Luvuvhu I couldn't help but admire this, the African savannah elephant, the largest land mammal in the world and one of two species of elephant in Africa. I had casually mentioned this fact to the American student sitting next to me in my Jeep.

'Two species of elephant?' she had asked 'I thought there was only one - *Loxodonta africana*?' During the course of the field school, the students were being tested on the scientific names of all African mammals, so she was keen to make sure she had the inside scoop on any unusual names. I was famous for adding such bits of little known mammalian trivia to exams. I explained to her that scientists had long known about a second variant of African elephant, the forest elephant, that had been designated a sub-species, but its status as a second *species* of elephant had been missed for decades.

But how could we miss a whole species of elephant? As I had mentioned to the student, they are, after all, the largest living terrestrial mammal, with male African elephants reaching an astounding 6500 kg. But, to a greater or lesser extent, that's just what has happened. Almost two years ago geneticists showed, through a comprehensive DNA sampling of elephants from across Africa, that there is not just one single species of elephant but definitively two. Like the student, until this announcement most zoologists had all African elephants lumped together into a single species, *Loxodonta africana*, which was further divided into four widely recognized sub-species. Now, genetics had proven that one of those sub-species, *Loxodonta africana cyclotis*, commonly referred to as the forest elephant, is in fact a distinct species now named *Loxodonta cyclotis*. So now we have the "savanna" elephant and the "forest" elephant in Africa.

Only a few astute zoologists had seen the forest elephant for the distinct species that it was. As early as 1900 a German named Matschie described the species *Loxondonta cyclotis* in his paper *Geographische Abarten des afrikanischen Elefanten* (Geographic variation of the African elephants). In 1931 a French zoologist named Frade also offered his support for the existence of a forest elephant species based on, of all things, the number of toe-nails elephants have. Frade observed that a typical savanna elephant has four toe-nails on each forefoot and three on each hindfoot. In contrast, the forest elephant, Frade observed, typically has five toe-nails on each forefoot and four on each hind foot. Unfortunately for Frade, what he failed to realize is that all elephants, savanna and forest alike, have

five nicely shaped toe-nails on each foot, fore and aft, at birth. It seems that because of the rough terrain that the savanna elephant lives in, as opposed to the presumably softer-under-the-foot ground beneath a forest canopy, savanna elephants tend to lose a greater number of toe-nails as they mature, leaving them with the statistically averaged four front and three rear toe-nails.

Despite Frade's miscounted toe-nails, other zoologists noticed more definitive characters such as the shape of the mandible, which is short and wide in the savanna elephant, while being long and narrow in the forest elephant, and the shape of the ears, which are rounded in the forest elephant as opposed to pointed in the savanna variety, but these scientists didn't generally go as far as suggesting that these differences were great enough to warrant a specific differentiation of the two forms. And certainly the forest elephant is smaller, with males only rarely reaching above 2.5 meters of height. This compares with the maximum height of a large male savanna elephant reaching nearly 4 meters with averages commonly above 3 meters. Conservation authorities on the other hand have for decades noted an extreme difference between the confiscated illegal ivory of the forest elephant and that of the other sub-species of Africa elephant. In the forest elephant, the ivory is long, skinny and straight and often carries a "pinkish" tinge, and it is highly valued for its hardness. The African elephant, of course, has the more typical ivory shape all of us are familiar with.

Nevertheless, the long-standing debate over one species or two was fairly definitively "settled" by two studies, one in 1958 and the other in 1974, both of which found that the L. a. *cyclotis* and L. a. *africana* interbred where their ranges were confluent, thus their differences could, by the "mate-recognition" concept of a species, be only "sub" specific. It is an interesting fact, though, that the actual areas where the forest and savanna elephant's habitats overlap are few and far between, making their opportunities to hybridise actually quite rare.

The recent genetic recognition of two species completely overturns this idea of sub-specificity, although the study alludes to low levels of interbreeding in the isolated cases where the ranges of the two species meet. What is most surprising about the recognition is the level of genetic differences observed between the two species. The forest elephant is more than half as different genetically from the savanna elephant as the African elephants are from the Asian elephant *Elephas maximus*! To place

this in perspective the African forest elephant and African savanna elephant are more distant from each other genetically than a tiger is from a lion.

But *Loxodonta* as a genus of elephant has not only been a problem for modern zoologists and geneticists, but also for palaeontologists. An ancient genus, going back around five million years or more, *Loxodonta*, at the end of the Miocene and throughout the early Pliocene thrived in Africa. But about two million years ago it effectively vanishes from the African fossil record, replaced largely by a close relative of the Asian elephant**,** *Elephas recki*. However, clearly it hung on in Africa and made its re-emergence about half-a-million years ago. Its numbers grew rapidly and *Loxodonta* in turn replaced *Elephas*, driving this genus rapidly to extinction in Africa. Based on the recent genetic evidence, what is now clear is that not one but *two* distantly related species of elephant re-emerged in dominance at about the same time. The geneticists also "clocked" the divergence point between the African savanna and forest elephant and predicted a point of divergence around 2.5 million years ago, an interesting prediction as this is close to the point when *Loxodonta* effectively vanishes from the fossil record of Africa. This implies that the two situations are linked and that whatever drove the reduction in numbers of *Loxodonta* also drove the speciation event. What is also surprising is the success of both species in the face of each other. Forest elephants are now suspected to make up almost one third of the total number of Africa elephants.

The two emerging paleontological mysteries associated with this recent scientific announcement are why *Elephas recki*, a successful grass eating elephant, that continued to specialize throughout the Pliocene and Pleistocene would relatively suddenly be pushed into extinction by the re-emergence of *Loxodonta,* and why are there two species of *Loxodonta*? Most isotopic studies of fossil elephants suggest that *Loxodonta* was also a grazer in its early stages before its reduction in numbers in the late Pliocene. Modern isotopic studies show that almost all Africa elephants, savanna and forest alike, prefer browsing to grazing although some communities incorporate small amounts of grass into their diet. The question that must be asked is that if *Elephas* pushed *Loxondonta* into the wooded and forested habitats to start browsing around 2.5 million years ago, why then was there a speciation event resulting in a savanna *and* forest variety of elephant?

As a final interesting and important note, conservationists are rushing to catch up with this discovery as it has critical implications for elephant conservation efforts, the most poignant being that we cannot just consider the number of "African" elephants anymore, but must recognize the number of each species present. Furthermore, and possibly more urgent is that present anti-poaching laws and ivory trade laws generally recognize specifically *Loxodonta africana* in their efforts and written laws, thus creating a potential loophole for poachers and illegal ivory traders to take the "unprotected" *Loxodonta cyclotis*.

At the bottom of the hill we slid our way off the elephant trail and into a cool, shady, partially dry stream bed. Everything was silent except for the sounds of birds calling. As we rested, gathering our strength, we were all quite. It was magnificent and peaceful. It was what Africa was all about. This was what exploring was all about I thought to myself as I leaned back against my pack.

Walking down the river bed minutes later it was clear that we were not alone in this valley. The fresh tracks of a small leopard meandered along the same route. Water was still seeping into the tracks they were so fresh. The animal was clearly heading in the same direction we were.

'It's just ahead of us' Gary whispered behind me. At that moment two francolin flushed about fifty meters in front of us, their shrill warning cackle breaking the silence.

We all froze in our tracks. 'She's right there, I agreed. We're pushing her out of the valley ahead of us. Let's give her some space.' And so we sat back down. Opening canteens and giving the leopard a chance to create some space between her and us.

Leopards are probably my favourite animal in all of Africa. I have studied them for more than a decade, following the predatory and collecting behaviour of leopards that live in the Cradle of Humankind near where I conduct most of my excavations. I had written several academic articles on these leopards and had become familiar with a few individual cats that I had followed over the years. I had even had a number of "close encounters" with leopards while surveying deep in dolomitic caves, my mind and attention on finding fossils and not on encountering predators. Brief violent charges, lasting only a couple of seconds and consisting of flashing yellow, white and brown fury , snarls and growls. All had ended as quickly as they had begun, with me standing open mouthed, not having had time to move from the spot, and the beautiful, graceful creatures gone, having passed within

centimetres of me. Anyone who claims that you would have a chance to react to the deliberate charge of one of these cats had never been on the receiving end of one of an explosive charg. We would give her plenty of space.

This leopard probably ad the same thoughts in her mind. Leopards are more than familiar with our species. In the past couple of hundred years we have hunted them ruthlessly. For a few thousand years before that we humans had an uneasy truce with this cat, whose distribution ranges throughout Africa and Asia. But long before that they were one of the most ruthless predators of our ancestors.

Leopards first appear in the fossil record of Africa around three million years ago, probably as an immigrant species from Europe and Asia. Once here though, there impact was enormous on our early ancestors. In the cave sites of the Witwatersrand where I work, there impact is evident in all of the bone collections. Bite marks and other evidence suggest that leopards have been a formidable predator and collecting agent at most of the fossil assemblages. There is even a single skull of young ape-man, maybe seven to ten years old, discovered at the site of Swartkrans and nearly 1.5 million years old, that shows two clear deep puncture marks in the top of the skull. Puncture marks that fit perfectly the canines of a large leopard skull found nearby.

After twenty minutes or so we started down the valley again, heading for the Luvuvhu. We had given the leopard plenty of time to move out of our way. The going was easy and rest had brought everyone's energy levels back up. Reaching the edge of the Luvuvhu we surveyed the water in front of us, one of the crocs, the big one or the small one, or another one altogether, poked his head up in the middle of the pool. I looked at my watch. Just past Noon. We had travelled seventy five meters in just over two hours. I began to worry that we would not meet my schedule. Well, as a friend of mine used to say – 'TAB' - That's Africa Baby. Get used to it or get out.

Delays or not, we did need to cross the river though and get to the clear beach we had seen from the top. Off came the shoes and socks, that was for everyone except Pedro, who decided that he had had enough with the off and on boot story and left his on as we waded. We moved far enough upstream of the crocs to a point where the water was clear and shallow and crossed using our now perfected group technique.

The next couple of kilometres were relatively a breeze. Walking along the edge of the Luvuvhu we enjoyed the sunshine and the relatively level ground. It was a sandy long curve of the river and we could walk on the fine gravel near the edge with little difficulty. Huge piles of flood debris lay closer to the vegetation covered valley walls. Immense trees, some more than a meter across had been brought down from upriver and piled in disorganized masses. They were beautiful but strangely sad, all these dead giants, whose positions attested to the power of this river in flood. One huge Nyala tree remained on our side of the rive. Nearly two meters across at the base, this great tree stood alone as a survivor. Its roots had been eroded and exposed but it still clung precariously upright, though with a slight downstream lean. Chunks of driftwood, some five or ten meters long were lodged in its branches twenty meters up. We sat under this lonely giant for a few moments. All of us contemplating the beauty of the place.

'Oomp, oomp' a strange, faint booming sound was coming from upriver.

'What's that?' Everyone strained to hear the low rumbling.

'Oomp, oomp' it boomed again.

'No idea'

There we were. Six human beings sitting under an ancient tree, survivor of floods, in a place where there had probably not been a human set foot in more than forty years, listening to a sound we couldn't identify. It was pure magic.

'Ungh, ungh, ungh', 'Ungh, ungh, ungh' Twenty minutes later and a kilometre up the river, the sound began to become clear. Hippos. Ahead of us at the mouth of the Gorge. Calling out in that deep, throaty voice unique to these strange animals.

'Ungh, ungh, ungh', 'Ungh, ungh, ungh'.

The sound reverberated off the cliff walls which now towered nearly straight above our heads, the vegetation thinning as the slope became steeper. It was that reverberation that had made the sound deep and rumbling and unidentifiable while we had sat in the shade of the Nyala tree. The traversable land on our side of the river was quickly becoming smaller and smaller as the river encroached on to the hillside. In addition, the water was beginning to speed up due to the narrowing

of the canyon walls. What had been a hundred meter wide river was now down to fifty meters. This meant that the water not only ran faster, but it was deeper.

Ahead, the Gorge was now clearly defined. Two towering cliff faces, each more than a hundred fifty meters high, formed the entrance to the narrow Gorge. The yellow sandstone faces of these guardians reflected gold in the late early afternoon light, but we were now in permanent shadow. Ahead, I could see that a pool had formed just past the mouth of the Gorge and dark shapes could be seen in the open piece of water several hundred meters in front of us.

'Ungh, ungh, ungh', 'Ungh, ungh, ungh'. The hippos called. It was a strangely eerie sound, bouncing off the Gorge walls.

'We need to cross' It was obvious. The opposite side of the river had an inviting bank that was maybe a hundred meters wide which travelled at least to the mouth of the Gorge. Our side ended abruptly at a sheer cliff wall just about where the hippo pool started. We were already clambering up and around boulders and over small log jams. This side wouldn't do at all.

We were now only about a hundred meters short of the hippos and could see them clearly. Three. A bull, a cow and a juvenile. All looking right at us, ears perked, only half their heads above water.

'Ungh, ungh, ungh', 'Ungh, ungh, ungh' The bull snorted, blowing water into the air. 'Ungh, ungh, ungh', 'Ungh, ungh, ungh' It wasn't hard to get his meaning. "My turf! Stay away!' 'Ungh, ungh, ungh', 'Ungh, ungh, ungh'.

We needed to cross here without going much closer to the hippos. The only problem, or more precisely problem*s*, were the crocs. They were everywhere. Scattered in the water every couple of hundred meters were crocodiles in the three to four meter size range. Plenty big enough to give us problems. I looked at my watch. Almost One. Not only did I need to stop and give the guys a lunch break, but by the length of the shadows, I could tell that we would only have two to three hours of light left before the entire Gorge was deep in shadows.

I looked back to where we had come from. The last safe place to cross was close to the Nyala tree, almost a kilometre back. I looked ahead towards the hippos. About forty meters in front of us, still well short of the hippo pool, was a point where the river narrowed to maybe twenty five or thirty

meters. A small rapid with some white water. If you're going cross in crocodile infested water, cross in fast water, the crocs tend to like the slower waters just below rapids, not the rapids themselves - or so bush legend has it. But was that too close to the hippos? The bull was clearly agitated by our presence. For all I knew, we were the first humans these three had ever seen, and their response to us could be unpredictable.

'What do you think' I addressed the question to Gary, pointing at the fast water.

'I say lets do it'

'Ok, but we stay *very* close together'

We walked forward to the point nearest the centre of the fast water.

'Is everyone ready?' Chambering a round and double checking that the safety was on I looked over the group.

'Everyone watch for crocs. Gary you watch our friends up there.' Just to emphasize the point a great black pointy head showed itself about eighty meters downstream. For some reason, this time, no one took their boots off. We slid down the bank, our packs hindering us, making us clumsy. Being first, I dropped into shin deep water, holding the rifle above me. The cold water slowly filled my "waterproof" boots, soaking my hiking socks.

'Ungh, ungh, ungh', 'Ungh, ungh, ungh'

The bull wasn't happy with our antics and had come closer. I glanced up at him then turned my attention back to the dark fast water in front of me. If he decided to charge, we would have time. He was going to have to cover maybe sixty meters of waist deep water, ten or fifteen seconds maybe. A croc would come like lightning, invisible in the water until he was only a couple of meters from us. I forget the hippos, trusting that Gary would give me ample warning.

Once everyone was down in the water we moving across as a tight group. The water quickly got deeper, its cold power dragging on our legs. Waist deep, then belly deep. I could here Stuart and Gary struggling a bit. It must have been near their chest level. The current was also surprisingly strong and I had to watch my footing on the rocks. About halfway across I glanced downstream. The croc that had been on the surface was no gone. Nice. 'Let's get across guys' Everyone picked up the

pace, pushing against the current. Seconds later we were out, safely onto a small sandbar on the other side. There was nervous laughter and a few jokes.

'Let's try not to do that again'

'My wife would kill me'

'Which would be a better way to go, your wife or a croc?'

'Ungh, ungh, ungh', 'Ungh, ungh, ungh'

We stopped for a quick lunch on high ground above the hippo pool just below the two hills, almost pillars, at the mouth of the Gorge. The pool was formed by a boulder fall which created a sort of dam, maybe fifty meters long and forty meters wide. The three hippos now stared silently at us, maybe wondering what these strange two legged creatures were.

'This is disgusting' It was Stuart digging into his tin of "mixed vegetables".

'Well, at least you'll get something different everyday' Pedro pointed out helpfully. It didn't seem to make Stuart feel better.

'I didn't even get cheese in mine' he moaned watching Godfrey squeeze some of the processed yellow stuff onto a dog biscuit. We all sat, eating in silence.

'Look behind you' Gary, sitting across from me, whispered. 'That bull hippo has just come out of the water.'

I slowly looked over my shoulder. Sure enough, just over a small gravel hump not fifteen meters from us, showed the grey-pink back of the bull.

'Remarkable, a hippo out in the middle of the day while we sit here.' With whispered comments I got the attention of the others. I wasn't really sure whether this was a dangerous situation or not. I had never heard of a wild hippo coming out of the water in the middle of the day while humans were so close. I reached slowly for the rifle.

'He's laid down' Gary whispered as he saw me pick the rifle up awkwardly from my half-reclined position. I looked back at where I had last seen the hippo. It was true, his back was now out of site. I slowly stood up, looking over the small rise. Sure enough, there he was, lying partially on his side, just sunning himself. Clearly unconcerned about our presence. The most dangerous mammal in Africa clearly wasn't concerned about we funny bipedal apes.

'I'll be damned' someone said.

Yes, I'll be damned.

We slowly gathered our things together. Lifted our heavy packs and started between the two pillar like hills, giving the sleeping hippo a wide berth.

'It's like entering through the pillars of Hercules.' Steve noted. That was an appropriate analogy I thought to myself as we took the first steps into the 'true' Lanner Gorge.

5

Dino Camp One

As we walked into the mouth of the Gorge, it was if we were entering another world. The two great sandstone cliffs which we had now dubbed the *Pillars of Hercules* guarded the entrance, and the whole Gorge narrowed to about one hundred meters in width. The ground turned quickly from sandbars and rare boulders to a veritable boulder field. Giant stone that had fallen from cliffs some distance upriver and been rolled down to the mouth of the Gorge over the eons. Each one was rounded and battered from its journey, but there was still space between the rocks and the going was easy for a few hundred meters.

It was now just after two o'clock and here, below the towering cliffs, the sunlight, short in winter under any conditions, was beginning to fade as the sun edged its way towards the top of the hills above us. Already half the valley was in shadow and as we meandered into these patches, the

temperature would drop four or five degrees. The sound of rushing water now dominated all else, making even hearing each other speak from a few meters away difficult. It was becoming clear that we were going to be forced to make another river crossing about three hundred meters above the hippos, but luck was with us in finding a relatively fast moving spot of clear water with blocking boulders on either side that made for a less tense crossing, although the current had accelerated remarkably now that the Gorge had narrowed.

Once on the other side, we discovered a well-used hippo trail that meandered its way up onto the side of Gorge, leading us into a magnificent sub-tropical forest. But even following the trail, we were forced to clamber over boulders and I marvelled at how an enormous fat bellied animal like a hippo could traverse such territory. I had also noticed that there were no longer any signs of elephant or buffalo. Clearly the terrain had become to rough for these animals. I wondered to myself how much of the Gorge would be restricted to these giants.

As we worked our way through the forest, the river was obscured from us at times, but its roar permeated the valley. I was now earnestly looking for a campsite for the night. Everyone was exhausted after the strenuous day and I was worried about losing the light. But where to camp in this narrow Gorge? We certainly didn't want to be anywhere near a hippo trail. These amphibious giants were nocturnal land animals, and the last place one wanted to find oneself was anywhere near where a hippo wanted to travel or feed, particularly in these confined conditions. But that left few options for a good campsite. One spot we passed I held in mental reserve, it was a flat sandstone rock of about four by four meters that hung out over the edge of the river. It would keep us out of the way of any dangerous animals, but would be extremely cramped for three two man tents and a fire. It also bordered immediately the forest and I didn't like the idea of being that close to dense bush, I hadn't seen any predator tracks yet, but that didn't mean they weren't there.

As we made our way back up away from the river on the hippo trail we emerged into a large grass covered clearing, perched about thirty meters above the river. It was a magnificent campsite. The grass was cropped down to about two centimetres and was green and soft. There were two huge boulders against the cliff edge and the left hand side was perched directly over the roaring Luvuvhu. The whole site was probably forty meters long and thirty meters wide. Perfect except for one thing.

The reason the grass was cropped like the green of a golf course was because this was a hippo feeding spot. Maybe the only one in this part of the Gorge. It would be absolutely the worst place to camp unless we wanted to become a hippo pancake sometime late in the night.

Jokingly I said 'Great campsite', catching the grin on Gary and Steve's faces, both of whom had clearly caught the joke. 'Lets drop our bags here and a couple of us can go on ahead and see if we can find something nearby.'

Packs were gratefully dropped off sore shoulders. I stretched my aching arms, wind-milling them around to get the blood circulating. Picking up my rifle I motioned to Gary and Steve and we set off up the river.

The area we were in was exquisite in its raw beauty. From about thirty meters above the raging river, which crashed its way between huge, rounded boulders of yellow and grey sandstones, the dense sub-tropical woodland started. A mixed forest that clung precariously to an ever steepening valley side until the walls became nearly vertical about a hundred meters above the river. The trees in this forest grew in odd, twisted shapes, each one having found one small patch of topsoil or one good space between a fallen boulder. As much as forty meters above the river there was also evidence of the great flood that had passed through this Gorge in 2000. At that time, huge areas of the Kruger Park had been inundated by great rains and every river in the park had broken its banks and risen, in some cases dozens of meters, above their normal course. Large chunks of driftwood still hung in trees or were lodged between great boulders. It must have been a dangerous, violent place during the flood and the signs reminded me of why we were doing this in the middle of the South African winter, when rainfall was least likely.

Gary stepped up beside me. 'We're not going to find anything up here, its too dense.' He was right. It was anything but ideal to try and camp in this sort of bush.

'Let's try down by the river'

We broke off from the hippo trail and began to work our way down through the boulder and bush. As we got closer to the river, the boulders became larger, but the air warmed significantly, probably an effect of the warmer-than-air water rushing nearby. Crossing into a giant boulder field on the edge of the river, we split up looking for a reasonable campsite in this rocky mess. I scrambled

over a large boulder and in front of me, perched over the river was a large flat sandstone boulder maybe fifteen meters long by ten meters wide. It looked like a promising spot and as I clambered down to it, I put my hand on a grey sandstone boulder for support. An irregular dark grey shape in the rock caught my attention. I knelt in front of it, examining it closely. Yes, it was what a thought, a dinosaur bone embedded in the ancient sandstone. Well, even though I'm not a superstitious man, that was simply too good of an omen to pass up. I took another look at the site. Big boulders protected us from the back and river was fast and rough in front of the site, meaning no crocs. There was plenty of driftwood for firewood and there were a series of flat ledges lower down that would give us access to the river for water. All in all a good campsite. I called for Gary and Steve to come have a look and see the bone. I ceremoniously proclaimed the camp "Dino Camp 1'.

When we got back the others we were met with a surprise. Stuart, Gary and Godfrey had begun to unpack their kit and the tents were already laid out, ready to be erected.

'We've found a campsite just upstream' Shocked faces greeted my announcement.

'Why do you think this grass is so short?' I enquired, gesturing around the area. I could see the realization dawn on their faces and their kit and the tents were quickly packed back onto the bags and we moved down to Dino Camp.

An hour later, the campsite was set up and in order and a small fire was burning in a perfect cul-de-sac made by a large boulder. A second, flat boulder made a nice bench seat. Soft river sand formed the floor of most of our campsite. Because of our position, we were sitting nearly in the centre of the Gorge, we still had sunlight. We were also protected from wind by the surrounding boulders. In our protected position about two meters above the water, it was one of the finest campsites I had ever been in. I immediately decided that we would base out of here for the next day at least and explore the first few kilometres of the Gorge without having to search for a new camp.

We got busy boiling water for drinking. I was trying a new liquid water purification system that held promise to solve the tedious problem of boiling water and not have the terrible taste that many water purification tablets add to drinking water. Nevertheless, as we were dependant on river water, which is notoriously difficult to decontaminate, I would use boiling *and* drops until our small supply of fuel ran out.

A short while later, I found myself propped against the sandstone boulder that contained the dinosaur bone, taking the time out to write in my journal. Gary, an enthusiastic dinosaur hunter, had wondered off in search of other bones. The rest of the team were scattered about the rocks, resting, writing or in quite conversation with each other. I looked at the small fragment. The find wasn't that surprising. Triassic aged protosauropods named Euskelosaurus had been found by a friend of mine who was a Kruger ranger, just a few kilometres South of where we were, but in slightly older rocks of the Triassic. I had personally found indications of small fragments of dinosaurs on the top of the Gorge in the upper-most parts of these sandstones, but it was always nice to find more. Once its in your blood, fossil hunting of any kind is addictive. I had actually begun my career in palaeontology hunting for dinosaurs in the badlands of South Dakota with great fossil hunters like Phil Bjork and Gale Bishop, so dinosaurs had been one of my early introductions to the science and even though they weren't my main academic interest, I had a soft spot in my heart for them.

My fingers caressed the sandstone as I went back through the day. My mind wandered to how different this area of Africa was when these rocks were laid down in the Jurassic, between 150 and 205 million years ago.

The world where this dinosaur had died was a harsh one. In the Jurassic, the disintegration of Pangea was effectively complete. Gondwanaland, the smaller super-continent comprised of South America, Antarctica, Australia and Africa was fragmenting. Between South America and Africa a rifted, long and narrow sea was developing which would eventually form the basin of the South Atlantic. Antarctica was now separated from South America by a much larger rift which extended through where we were in South Africa. Australia was also beginning to rift from Antarctica. This whole mass was slowly drifting northward while at the same time rotating gently counter-clockwise. Along the rifts, huge volcanoes would periodically erupt, spewing forth masses of basalt.

A variety of dinosaurs roamed this Jurassic world. Huge sauropods put enormous pressure on cycads, conifers and other types of vegetation. Stegosaurs and camptosaurid iguanodons were included in these giant browsing beasts. Smaller, fast herbivores like the fabrosaurs were the antelopes of this world. These in turn were fed upon by small and large carnivorous therapod dinosaurs which included the small compsognathids all the way up to the giant allosaurus. In the air it was even

possible to find the proto-bird Archaeornithes. The seas were warm and full of life. Crocodiles, distant ancestors of those in the Luvuvhu, were diverse and abundant.

But while most of the climate in the Jurassic was warm and moist, the area of South Africa that we were in now was covered by a large desert. These sandstones that I was resting against were part of that desert. They were in fact remnant dune structures and shallow annual rivers. In this great desert there would have been oases and it was the water that these provided that would have congregated dinosaurs.

I fingered the bone fragment. It looked like a rib from an animal the size of a buffalo. Was this the remains of medium-sized herbivore or a large carnivore that died here some 200 million years ago? For now, it would keep silent on its exact identity, but it did speak to me about something else. Where there was one dinosaur bone, there would be another, and another after that.

I glanced up from my writing to see Steve motioning to me. He was trying to say something and simultaneously gesturing with his hands that something was behind me, but over the roar of the river I couldn't make out his words. Turning my head slowly, I found myself fact to face with an enormous lizard, flicking its tongue at me from about a meter away. A Rock Monitor. *Varanus exanthematicus*. White, with black and yellow bands and leprous black spots. Maybe a little bit more than a meter and a half long. For a moment the irony of seeing this distant relative of the dinosaurs I was thinking about overwhelmed the very fact that it was right next to me. I had never seen one of the large lizards in the wild this close, they are normally incredibly frightened of humans, who occasionally include them on the menu. They supposedly taste like chicken. But this one was anything but afraid. It cocked its head sideways, fixing it right eye on me as if saying 'That's no baboon. What is this funny ape?'

We stared at each other, this reptile and I, for maybe three minutes before it slowly started to move along the rock away from me. I stood slowly to follow and it seemed unperturbed by my presence. As I angled around a ledge to get a better view, I surprised another lizard, this time a large Striped skink, which was very much afraid of me. It darted up and over the ledge, and right into the mouth of the waiting monitor. One gulp, a sliver of tail between the bony lips and the lizard was gone.

With a brief cock of the head in my direction, the monitor slowly crawled into a deep crevice between two boulders.

As I watched the monitor disappear I looked up and around me. Everyone was now out site and I might have been alone in the Gorge. Just me, dead dinosaurs, dead lizards and the Rock Monitor, and as the Rock Monitor disappeared, for a brief second, I was alone. Then I glanced downriver towards the Pillars as a movement in a pool about a hundred meters below me caught my attention. One head, two heads, three, four, five more. Hippos, lots of them and in the middle of them, big crocodiles. You never are really alone in Africa I reminded myself. You just have to know where to look.

As the sun set on our campsite, the temperature quickly dropped and we gathered close around the fire, just like humans have been doing for more than a million years in Africa. There were a few clouds, obscuring slightly the great star fields. There really is something entrancing about a campfire and when in the bush, alone like we were, it gives one a sense of great security, whether real or not. Our fire, built on driftwood, flickered orange and yellow and cast shadows on the rocks around us. It was a strange sensation, sitting there as a group. The moon had not yet risen, even though it was supposed to be nearly full, the canyon walls were going to delay its light. Thus, the only light we had was that cast by our fire. Everything was pitch black outside of that. All sounds were dwarfed by the river, with its gentle roar. As we sat, ate out of our Rat packs and enjoyed some cigars that Steve had thoughtfully provided, the conversation rambled, as campfire conversations do everywhere, along dozens of topics with no real direction.

'Look at that.' Godfrey said, pointing behind us. We all turned to look. The rising moon was casting a blue light on the clouds and the edge of the white orb was just appearing above the cliff tops. As the moon rose we had a terrific view.

'Must be one of the best seats in the World for this show' Stuart noted to our silent group, watching this celestial show.

It was fantastic. I must admit that it reminded me of a photo I often use to start lectures. I begin almost every public lecture I give on human evolution showing one of the splendid images of Earth from space. This may seem odd to some, for what after all do images of Earth have to do with

human evolution? Its actually easy to explain though. I use them for two reasons. First, an image of Earth from space is extremely useful for illustrating the dominant and unique position of the continent of Africa on the planet., as Africa typically forms the jumping off point of my lectures since this is the jumping off point for hominin evolution. These images readily illustrate the huge size of Africa, which occupies about 1/3 of the habitable land surface of the planet. At the same time one can see instantly how Africa sits as the only continent that straddles the equator with substantial land surface running East, West, North and South along the equatorial line.

Secondly, I perceive these images as symbols of human evolution. How better to demonstrate the remarkable adaptive abilities we inherited from Africa? With the morphology, behaviour, tools and skills honed in Africa over some 6 million years of human evolution, this small African ape that we are, was able to leave the physical borders of our planet and take such a photograph. Thus, largely for sentimental reasons, in my lectures I usually choose one of the images of Earth taken by the manned Apollo program rather than one by an un-manned Earth Orbiting Satellite. I think every one in my generation has some attachment to those manned missions. Despite only being three and half years old at the time and having only the vaguest of memories of day to day events, I remember vividly that July evening in 1969, when my parents roused me from slumber and sat me in front of the black and white television to watch the grainy picture of Neil Armstrong descend the ladder of the Eagle to be the first human to set foot on the Moon.

Beyond the obvious, and truly amazing technological achievement the moon landings represent, they highlight what a truly remarkable creature we humans are. Most have probably never thought about it in this way, but we humans are almost certainly the only animal that ponders and explores its own history. This is not intended as a "human-centric" statement, but a simple fact of coincident evolution of our species on this planet.

Over the past several million years, we humans have acquired a remarkable, adaptable brain that allows us a great deal of mental freedom not possible in even our closest living relatives the African apes. The field of science that I participate in, paleoanthropology, is dedicated to nothing more than the examination of where we humans come from: physically, ecologically, behaviourally and culturally. What a tool this is, for we humans can learn from our history, not just through

interaction with living persons that we meet during the course of our brief lifetime, or through the spoken and written word, where we literally interact with dozens, if not hundreds of generations of once living humans, sharing their experiences, good and bad, without having to necessarily experience them ourselves.

Paleoanthropology delves beyond the written and spoken record into a deeper human history, going back thousands, if not tens of thousands of generations. Transgressing even the borders of our own species. More remarkable perhaps is the ability of modern humans to not only examine our own history but those of other animals, either living or extinct. This allows us not only a simple voyeuristic pleasure, a tyrannosaurus is after all inherently interesting to look at, but it also allows us to learn from the past history of other life forms, a tool that I would argue might one day save our species and the very biodiversity of this planet.

Living in South Africa we are surrounded by one of the richest paleontological and geological records on the Earth, and despite my chosen profession of paleoanthropology, I cannot escape from my academic roots in Georgia where I was also trained as a geologist. Besides the dolomitic region near Johannesburg that is the location of the caves that hold the fossils nearest and dearest to my heart, there are two other geological structures nearby that continuously distract me with their magnificence. The closest is the Tswaing meteor crater about forty kilometres North of Pretoria. Tswaing means "salt-pan" in the local seTswana language and this name derives from the small salty lake that fills the center of the crater.

The crater was formed about 200,000 years ago when a stony meteorite estimated to be about sixty meters in diameter and travelling at around 60,000 kilometres per hour struck this spot, vaporizing on impact and producing an explosion estimated to be equal to around 10 million tons of plastic TNT (10 Megatons in modern nuclear war speak). The crater itself is still largely intact, the event having occurred such a geologically short time ago. When I'm working in nearby fossil deposits from that same time period I often imagine what it must have been like for animals and humans in the region far enough away from the impact zone not to have been vaporized when that object struck!

Slightly further afield, about 100 kilometres southwest of Johannesburg, is the site of a much larger and more ancient extraterrestrial impact known as the Vredefort dome. The Vredefort dome is

the remnant of the central rebound peak of an impact crater estimated to have originally been between 250 and 300 kilometres in diameter. It was produced just after 2000 million years ago (2 billion years) by what was probably a chondritic meteorite greater than 10 kilometres in diameter. As a comparison, the *Chicxulub* crater in the Gulf of Mexico is estimated at approximately 180 kilometres in diameter and it was this impact that may have brought the 250 million year reign of the dinosaurs to an end. But when the Vredefort object struck, the only forms of life on the planet were single-celled organisms such as blue-green algae. Nevertheless, the Vredefort event must have been an enormous insult to the planet, creating shock and tidal waves that would have been felt around the world. The deformed rocks of the Vredefort bare mute testament to this.

But even these impacts pale in comparison to the granddaddy of all extraterrestrial Earth impacts: the so-called Giant Impact or Theia event. From data collected by the Apollo and Luna manned missions and by the Clementine and Lunar Prospector un-manned missions, researchers have now demonstrated that the Moon itself is a product of an impact with the Earth of a Mars-sized asteroid or proto-planet (named Theia) in the earliest days of Earths formation.

The Clementine mission demonstrated that the whole of the Moons surface was once covered with a "magma ocean". This was shown by establishing that the whole surface of the moon is dominated by an aluminium rich rock called anorthosite, which forms when molten rock crystallizes, slowly allowing aluminium rich low-density minerals to "float" to the top of magma, while high density metals like iron "sink" in this heated liquid rock. The idea of a giant impact was further substantiated by observing such craters as the South Pole-Aitken basin, a 2600 km wide impact structure whose floor is iron rich. Thus, when the huge impact of the Aitken event occurred, the overlying aluminium rich rock was stripped away, revealing the deeper iron rich rocks. Most of the craters on the moon are thought to have been formed by impact of a variety of different sized meteorites and comets. Because there is no "weather" on the moon, the evidence of these extraterrestrial impacts remains effectively forever unchanged, giving the moon its Swiss cheese-like appearance we were now looking at. This is in sharp contrast to Earth, where smaller impact craters are generally wiped away "quickly" (in a geological sense), by the actions of erosion or plate tectonics, or from the simple fact that they struck the deep water of the oceans instead of land. Isotopic studies

of the anorthosite of the Moon suggest that the magma ocean occurred at the earliest stages of Moon formation around 4.4 to 4.5 billion years ago, linking this magma ocean event directly to the origin of the Moon.

The only known way to achieve such temperatures that would produce these molten Moon-wide phenomena is if the Moon was formed by a giant impact between Earth and a huge extraterrestrial object, knocking away the Moon-sized ejecta into orbit around Earth. Recent analysis suggest that something less than 65% of its mass is made up of the original impactor and more precise dating has suggested that the giant impact occurred around 4.553 billion years ago.

But why, beyond hind-sight spectator value, is all of this knowledge about extraterrestrial impact important to humans? As I noted, one of the remarkable abilities of humans is to learn not only from their own history but that of other animals and in fact the history of the Earth itself. With the capabilities we now have, only some 150,000 years into the evolutionary history of our species *Homo sapiens*, we can see the fate that has befallen other life forms due to these catastrophic events and learn from them. We know what happened to the dinosaurs. Their reign was ended in a flash and a bang by a relatively tiny object flying through space that Earth had the misfortune of getting in the way of. We know that that while such an event is literally a "one in a million" chance occurrence, such events do repeatedly occur, and in a geological sense, relatively frequently, in our Earths history.

But unlike the dinosaurs, or even those humans sitting on the Witwatersrand just watching the Tswaing object fall from the sky 200,000 years ago, we modern humans, because of the forewarning given to us by palaeontology and geology, literally by studying the history of other animals, have at least a fighting chance of preventing such an impact from sending us the way of the dinosaurs. Of course Hollywood has recently capitalized on the potential horror of these extraterrestrial extinction causing events. However, they didn't highlight that it is the uniqueness of humans and our never-ending search to understand the past that might just give us, and the present biological diversity of this planet, a chance sometime in the future when misfortune dictates that Earth's path intersects with one of these deadly space wanderers.

'You know, that was once part of Earth' I said to no one in particular as we lounged around the fire.

'So when people landed on the Moon they were really just going back home' Godfrey wisely noted.

Godfrey was right in a way, we did go back to a piece of our home when we went to the Moon.

6

Exploring the Valley of the Giants

'A leopard was in camp last night' It was Gary, crouched down over sand just a couple of meters from my tent. I walked over to look. Four distinct toes, sloping, almost cone-like pad with a double notch in the back. Leopard for sure.

'It looks like a small female.' Gary said.

'Or maybe they're all small in the Gorge. There's not a lot of big game to eat. Mostly dassies, francolin and rabbits.' I guessed.

'It sure wasn't afraid of us.'

'Nope.' I looked again at the distance between my tent and tracks. I could touch both from where I was crouched.

'I'm glad she's small.' Gary commented. I nodded my head in assent.

Twenty minutes later after people had satisfied themselves with whatever breakfast they had created out of their Rat packs, I gathered everyone around me near the fire.

'Ok here's the plan for the day. We're going to break into two groups. Stuart, Godfrey and myself are going to head up river and check out the terrain for tomorrow's hike, and see if we can find any more fossiliferous deposits.'

I knelt down and unrolled the map. 'I want the rest of you to scout these hills here, behind us, above and just in front, and see if you can find any caves, archaeological remains or anything else we might be interested in.'

'I'll take the gun since we're going into unknown territory. Gary, do you have the bear bangers?' Gary pulled the small blue pen like object from his pocket. It had a bulbous white head. A bear banger was an ingenious device used in the northern hemisphere to scare grizzlies away. When you fired them, a flare shot up into sky about twenty five meters and then exploded with the force of a small stun grenade. Few animals, even angry ones, would stand their ground in the face of such a device. It was an excellent alternative to deadly force in many situations and was becoming a popular primary or backup device among game rangers.

'We'll leave the packs here. Just day packs. We meet back here no later than Two this afternoon.' Everyone nodded and started filling canteens from the river and packing the necessary supplies each person would need.

Thirty minutes later I was confronted by a major problem. The problem came in the form of boulders, hundreds if not thousands of boulders ranging in size from a couple of meters, to ten to twenty meters in diameter. It was an enormous boulder field, one that I hadn't really expected.

We were about a kilometer short of a point that we called "lookout". This was a high prominence of rock, maybe two to three hundred meters above the bottom of the Gorge that one could access by a rough track that ran along the top. It was a popular spot for sundowners for those of us who knew the area, or a place to go and privately contemplate this vast wilderness. I had seen the end of this boulder field from Lookout point before, but I had not realized the actual size of the boulders nor their density.

The boulder field was immense, at least from the perspective of standing on one end and needing to get to the other. Where Godfrey, Stuart and I stood, it looked to be three or four hundred meters in length. We had seen a beach of sorts directly below the Lookout, so we new the field at least ended there. A few thousand, or hundred thousand years ago, the entire northern side of the Gorge had collapsed. Three hundred meters of rock had dropped into the river below creating a sheer cliff on that side. This collapse must have first created a huge dam wall, then, as the river filled and flooded over the top, it must have broken this wall into a jumble of fragmented rock and remains of trees. Over the eons, these rocks had been rounded and packed together into a tight blockage that the modern Luvuvhu was busy trying to break down further. It roared between the spaces, creating pumping channels of whitewater. At some points it was centimeters deep but full of pressure. At other points it was five meters deep and sluggish where it met a temporary dam created by a cluster of boulders.

I looked at this field with some trepidation. Our minimal climbing gear might or might not be adequate for this sort of work. I stared up at the collapsed hillside. Could we move through the maze of thick jungle and high cliffs? I didn't think so. I looked across the river at the southern bank. Could we cross? We'd have to explore that later, once we'd made it to the middle. That in and of itself looked like it would be hard going as the boulders in the centre of the Gorge were as big and packed together as those on the edge.

'What do we do?' It was Stuart.

'Well, we try and find a path through this so that when we have packs on and three other guys we can make it.' I replied.

"Let's do it!' It was Godfrey, who had begun to pick up the moniker of G-man, always upbeat, ready for anything.

'Ok, my gut feeling is we work towards the middle of the river through this stuff. That will give us an idea as to whether we should cross, or whether we should just tough it out and go forward. Anyway, my gut feeling is that the closer to the middle we get the easier it will be. At least the boulders are smaller.'

I was wrong. I had never done much work in a boulder field. What I didn't realize is that a two meter boulder is as inaccessible as a twenty meter boulder if you don't have the right equipment. The second mistake I made was that as we approached the centre of the river the jam that had been created by hundreds of rocks being shuffled slowly downstream made choke-points where the water became dramatically deeper. Not only did this create treacherous fast water pouring between boulders, but it created deep pools suitable for crocs. More than once we would slide alongside a boulder or clamber over a rock when a croc would suddenly splash and swirl below or behind us, disappearing into a dark void between two rocks. It was scary stuff. Several times, we worked our way for half an hour around a series of boulders and we would find ourselves right back where we had begun. Not only was it exhausting, it was frustrating.

To make matters worse, the greater progress we made the worse the going went. Debris from the 2000 flood had packed up at the head of the boulder field. At points, thousands of logs and branches had been piled up in the spaces between the big boulders. The only place I had seen similar types of log jams was in the Pacific Northwest of North America where huge flood jams of timber were often created during thaws. And just like those, when you walked over them you had to be very careful. One false step and you would plunge down into a vacant area below, water rushing a few centimeters below your feet. Not only were we risking injury in a place where we could ill afford it, I didn't know how many crocodiles lay beneath these jams. Did they even use such locations as homes? I didn't know and didn't want to find out.

After five hours we reached the beach below Lookout Point. Exhausted and dispirited. Leopard and hippo tracks covered the small pool like lake in front of the beach. Five hours! And we didn't have 25 kg packs on our backs! Had we learned anything? I knew not to go near the centre of the river. That created more backtracking than forward progress. Could we save time? If we used ropes, which we hadn't done, we could probably cross some of the very big boulders. That would save a huge amount of the time and energy that we had used tracking around these giants. I looked back the way we had come.

'We're going to try the high road on the way back.' Gesturing to the vegetation covered cliff above us. 'Maybe it will be easier.' Godfrey and Stuart nodded, too tired to talk. I looked up at the

towering cliffs. There was a legend among the Makuleke, that one of the ancient chiefs used to throw criminals, or anyone who irritated him, off of the steepest points of Lanner Gorge. Surely it must have been somewhere around here. The tall vertical cliffs rose hundreds of meters straight up.

We sat on that beach for another half an hour, but it was getting late. We needed to be back by the appointed deadline and we had to better than double the pace we made on the way in to get back by two o'clock.

'Let's go guys.'

The high route was, if anything, worse. It made our climb the day before look like a picnic. Thick bush, latex plants and large boulders made it clear that tomorrow we would have to cross the boulder fields with our packs. There was no way we would make it through these thick jungles that clung to the sides of the Gorge. At one point we had traversed maybe a hundred meters up. Their was leopard sign everywhere. The view was magnificent, but as we worked our way through the mess, we found ourselves right back where we started.

The last hurried half an hour was painful to say the least. We didn't want the other instigating any emergency procedures so we were determined to make it back on time. Which we just did.

The others had about the same luck. After we had left in the morning, Steve, Gary and Pedro had headed up the steep sides of the Gorge looking for caves or rock shelters. They found themselves chopping through thick vegetation like we encountered above the boulder fields on the way back. They had found some rock shelters, but even at a hundred meters above the river there were signs that these small hollows had been washed out by floods. These floods had washed any potential for archaeology out of these mini caves. There had been truly some great torrents in the history of Lanner Gorge, that was clear.

Back at Dino Camp I decided to give everyone the afternoon off. We were already losing light, and everyone was exhausted from both the day before and today's explorations. I was very worried about tomorrow. Could we make the boulder field with packs? What lay beyond? If we failed tomorrow we might have to turn back and give up the whole expedition. I needed the time to think the problems over and so everyone went off to do what they pleased. Steve to bathe in the cold water

of the rapids near camp, Gary to explore for more dinosaur bones, Pedro to go through his equipment and Stuart and Godfrey to go and practice the *Ncuba* game on the rocks below the camp.

The *Ncuba* game fascinates me. It is possibly one of the oldest games in the world, played at least throughout the iron age, maybe for as much as two thousand years. Found across Africa it goes by a wide variety of names – *Maraba Maraba*, *Bow* and in the area where we were - *Ncuba*. carved into flat rock faces, it consists, in its simplest form of about twenty four depressions arranged in four parallel rows of six. Some versions have more depressions, but they are always evenly matched. The depressions appear to be carved into the rock surface using wet sand and round grindstones. It must have taken some time to carve these games and it is often postulated that herd boys made the games as they are usually positioned near overlook points or water.

Although there are plenty of variants, the game is relatively simple to play. An equal numb of pebbles, or seeds, are placed into each depression of the first row of a players side – from as few as three up to six or nine stones per depression are used – depending on how long one wants the game to last. Each player controls the two outside rows. The person who starts picks up all of the pebbles in any depression on his side and drops them, one by one, into full or empty immediately adjacent depression. When the player reaches the last depression in his count, if its empty, he drops his last stone in and it is the other players turn to begin. If however, the last depression has any stones in it, the player picks these up, leaving the depression empty and continues to drop in his two lines. Only when he reaches and empty depression and leaves one stone does he stop and let the other player begin.

The goal is simple. If you land with your last stone on your inner row across from a depression on your opponents side where there is only one stone, you take that stone, leaving your opponent with one less marker. The person who wins, takes all of his opponents stones before his are taken. It can become a surprisingly complex mathematical game that can last for hours if enough stones and depressions are used. The stones supposedly represent cattle, central to almost every pastoral culture in Africa. The depressions represent kraals, circular cattle enclosures made of thorns, some with low stone walls. The symbolic exercise of the game is cattle theft. I steal your cattle from your kraal and you steal mine – the best thief wins! I have even seen variants of the game where

controlled forms of "cheating" are allowed. I suppose anything goes in the world of cattle theft from kraals! Played by experts, the game is lightning fast and speed is applauded by spectators.

I watched Stuart and Godfrey wandering down to a flat spot on the river. It was Stuarts intent to do his Masters on the *Ncuba* game – its history, different varieties of play, as well documenting the many dozens of ancient games that were carved into the rocks of the Pafuri area. Finding a white stone, they drew four even rows of circles onto a flat area of sandstone and began to gather stones.

I watched fascinated. A white South African being taught an ancient game by a black South African who was maybe a direct descendant of the people who had carved these games into the surrounding rocks. They played for hours. It gives one hope.

I spent the remainder of the afternoon bathing in the rapids, in a small rock bound pool that was safe from Crocodiles. Godfrey and Stuart continued their *Ncuba* match. At about half past three, as shadows filled the Gorge, I wandered down to the pool below camp to look at some possible dinosaur bones that Gary had found and to get a close look at the hippos and crocodiles I had seen the evening before. Steve joined me on this mini excursion just a few hundred meters downriver. Surprisingly, as we approached the hippo pool, neither the crocodiles nor the hippos seemed overly concerned. Most of the crocs, including some four and five meter specimens, remained on the banks. Undisturbed by these bipedal intruders. The hippos gazed at us dispassionately from their position in the centre of the pool. Five of them. It looked like four cows and a bull. They would submerge for a few minutes then rise again a couple of meters away, always keeping an eye on us. Several crocs bobbed their way around the pool also paying a disappearing act for a few minutes before reappearing meters away. This would not be a good place to swim.

'Take a look at this.' It was Gary, showing me another couple of decent dinosaur bones embedded in the same type of matrix as the one I had found yesterday. These, however, were a bit larger but just as undiagnostic. Still, a good find, and indicative of the widespread fossil bearing deposits in the area.

'Let's take a closer look at that hippo pool.' I suggested as we worked our way over boulders and along small sandbars next to the river. As we finally arrived at the edge of the pool, the hippos remained calm, doing their disappearing-reappearing act, but remaining in the centre of the pool. Still,

we were being cautious. These animals had almost certainly never seen a human before and their actions could be unpredictable. Added to that, we certainly didn't want to get too close to the waters edge. We could see maybe five or six crocs that were moving around in the water plus another two on the bank. As we stood on the sandbar, maybe four meters from the edge of the water, we were safe from any crocs which saw us as potential prey. It was unlikely even a big croc would charge out of the water, but if it did, we had a large fallen tree and boulder to our back. I was a little more concerned about the hippos. They were not behaving like any hippos I had encountered before, except for those we had encountered yesterday. No threatening yawns, no displays and no sounds. Typically we would be getting quite a show from hippos who's territory we had invaded.

As dangerous as hippos are, like many African animals, when things are very serious, they go quite. When an elephant charges trumpeting, making lots of noise and putting on a show, the odds are that its more of a "bluff', or a so called "mock charge". Just a deadly serious warning that you have invaded its space. The same with lions. A thrashing roaring charge is also generally a bluff. Hippos who charge on top of the water, yawning and making lots of noise will probably stop. Probably. Its the silent underwater charge that indicates a deadly serious situation developing. But these rules are made to be broken as each and every one of these animals is an individual, and one should always approach these situations with the knowledge that no two animals will necessarily behave in exactly the same way. As I stood there pondering this, I noticed that the bull had been under for an unusually long time. I scanned the pool. Where had he gone?

'Look in front of you.' It was Pedro, he had joined Gary who was now sitting above Steve and I on a boulder overlooking the pool. The bulls head emerged from the water, not five meters away. He silently looked at us. Not a sound. Ears erect. We got the message.

'Let's back away very slowly.' I whispered to Steve. Step by step we gained the safety of the dead tree. The bull, staring at us, slowly submerged.

'That was a lot closer than I like.' I commented to nervous laughter from the rest of the group.

'Amazing how a message can be so clear without a sound being made.' Steve added. I nodded agreement. The bull re-emerged in the middle of the pool among his cows. He had made his point to these strange intruders. 'My pool, my girls, stay away.'

As the four of us walked back to camp Gary pointed to the sky.

'Lanner falcons.' There they were. The birds that the Gorge was named after. Swooping like small missiles, the pair sailed gracefully along the cliff face.

'I've never actually seen Lanner falcons in the Gorge.' Gary noted. Ironic, given that he'd spent a year here. We all watched the birds darting back and forth in a magnificent aerial ballet. As suddenly as they appeared they were gone.

'Where are they.' I asked, searching the skies.

'There' said Steve, pointing upriver. 'Nope' that's not them, he corrected himself. 'Those are eagles.'

'Black eagles.' I added. A pair. What a stroke of luck. Probably my favorite bird in Africa. *Aquila verreauxii*. Black with white wingtips and a yellow beak. Close relatives of the Golden eagle. Their wingspan can reach over two meters. I had spent years studying these birds. They had been at the core of work I had conducted years before. One of my first major projects.

In early 1993 I had watched a pair of Black Eagles kill a vervet monkey and that event had instigated a piece of research that led to Ron Clarke and I publishing a paper on a theory that Eagles had killed the Taung child, one of the most important human ancestor fossils ever discovered. A theory that still held today after more than a decade of testing.

As the two eagles skimmed the cliff edge above us, I watched as the eagles scanned the Gorge, probably looking for dassies, rabbits or francolin. For a moment, as it passed over our heads, the lead bird gave us a sharp look, head cocked sideways, before continuing its search for prey. Suddenly, from behind the two birds the Lanner falcons approached in a swift graceful dive. Missing the lead eagle by centimeters they wheeled around for another attack. The big eagles took evasive action. It reminded me of two World War II fighters harassing two great bombers. One with speed and agility, one with size and armament.

'Whoosh.' A feather was cut loose from one of the eagles wings, the black quill rocking gently down towards us. We watched for several minutes as the aerial contest continued. The eagles dodging at the last minute as the falcons whirled and swooped, whirled and swooped.

'I wonder if that happens everyday?' asked Steve. No one answered. We didn't have and answer. We all just watched the aerial duel. As the light faded, the contest waned. The two falcons made longer and longer passes until they once again vanished. The irritated eagles turned up river. The way we would travel tomorrow, except they did it with greater ease.

'That's the way to get up the Gorge.' Gary noted.

'It might be the only way.' I replied.

That evening the moon was later in rising. Leaving us in pitch dark until after Eight. Lying in my sleeping bag later that night, I listened to Pedro and Stuart's soft conversation around the fire. They were talking about the days events and tomorrows journey through the boulder field. I quickly drifted into a deep and contented sleep.

7

Crossing the Valley of the Giants

'We saw the leopard last night.' It was Pedro, getting out of his tent as I scratched around in the embers of the fire, looking for a hot coal to start the morning coffee with.

'Where?' I asked.

'Over there.' He gestured. 'Stuart and I were sitting at the fire when she came right past. Four or five meters away.' I walked over, tracks in almost the same position as yesterday. 'She's really tiny.'

Amazing behaviour. A wild leopard coming right into camp while people were awake. It was probably like the hippos and rock monitor. She'd probably never seen humans before. Just curious.

We dismantled camp quickly. In forty-five minutes we had all had breakfast, packed our kits and struck the tents. After covering the ashes of our fire and collecting our trash we were ready to go.

'Is everyone ready for today?' I asked, looking at each man. Yesterdays rest had lifted everyone's spirit. I could tell by their faces that they were ready.

'Ok, lets do it.'

Half an hour later we stood at the beginning of the boulder field looking up at the huge rocks.

'Yesterday we tried meandering back and forth. We tried going towards the middle and we tried the top.' I pointed out to the three that had not been with us the day before. 'None of the routes were any good.'

Everyone just looked at the jumble of giant rocks and debris in front of us.

'I think we should try going straight through.' I knew that the other methods had not worked. We had the ropes and enough people to work our way over the top of the larger rocks.

'What do you think Pedro?' He was the most experienced climber among us. He looked for a while at the rocks.

'I think we should try it.' And with that affirmation we went straight ahead.

An hour and a half later I was still undecided as to whether we had made the right decision. The time had been spent climbing one boulder after another – sometimes using ropes to haul bags up, sometimes to use ropes to haul people up, sometimes to use ropes as guides to prevent five and ten meter falls as we traversed around rocks. We were about halfway through the boulder field. Not bad going considering that it took almost twice that long yesterday for the three of us when we were unencumbered by packs.

We had stopped for a mid-morning break in a hollow made by six large rocks. Water burbled underneath the one closest to the centre of the river. We were tired, but it was actually going better than I thought.

'Look up there.' Steve was pointing to the top of the Gorge high above our heads.

'Baboons' Gary said. Indeed, a troop of the primates could be seen silhouetted against the very crest. Dozens of them. All looking down at us as we looked up at them.

'What do you think they're thinking about?' Steve queried.

"Why those stupid humans are stuck in the middle of these rocks' quipped Stuart.

I like baboons a lot. They're smart. In some ways they make a good analogue for our early human ancestors. Generalist feeders, sort of the "Jack of all trades" among African primates. *Papio cynocephalus*, which is the Linnaean name for baboons, means the dog-faced baboon, given for its long snout. It's probably the most successful and widespread of African primates besides humans. Males are often more than twice the size of females. They have extremely complex social structures with anywhere from 8 to 200 individuals per troop and they use a variety of communication methods including definitively different warning calls for leopards, snakes and birds of prey.

When the troop moves, one will often see males scattered around the periphery of the group, with dominant males usually taking up the lead position, while less dominant males are at the back. When foraging, baboons will eat almost anything, including small mammals, birds, fruits, nuts, insects and seeds. They have even been known to hunt baby antelope. As an interesting fact, a male baboon has arguably the largest relative canines to body-size of any animal in Africa. A major difference between we humans and baboons is that this is exactly the opposite of the condition found in humans. We have absolutely the smallest relative canines to body size of any primate, a fact that goes all the way back to our earliest ancestors and a morphological trait that I often use to illustrate a point to my students, that I believe we are the most peaceful mammal to have ever lived - and proof of that is in those small canines.

A couple of years ago, I used this argument at the World Summit for Sustainable development when speaking to delegates. As they were debating, and sometimes arguing, with their fellow human beings, I felt it was worth reflecting on the African history of our species, and to take cognizance that we were not molded by this continent into a vicious killer or even a hateful primate, but have evolved over some 6-million to 7-million years into probably the most peaceful of all living mammals. This, I felt at the time, and still feel today, is our true African heritage and one that the delegates should have reflected upon during their interactions.

The case for this argument is quite simple. Almost every critical event related to human origins has come out of Africa. From the way we walk on two legs, to our big brains and even the childlike physical features of our species, which so differentiates us from our more robust ancestors.

Our culture itself is a product of the African environment: stone tools were first invented here more than 2.5-million years ago and the earliest evidence of the controlled use of fire, almost 1.5-million years ago, is found on this continent. The earliest archaeological evidence of this critical technological event in fact comes from the site of Swartkrans, on the outskirts of Johannesburg. Recent research even tells us that the origins of art and our very spirituality, in the form of burial of the dead, also originated in Africa nearly 100,000 years ago.

For millions of years members of our family tree evolved in Africa, utilizing first a gathering lifestyle, when they were little more than bipedal apes, and then, as more complex tools emerged and morphologies changed, a hunter-gatherer lifestyle. It was this physical, cultural and behavioral change that allowed the first members of our genus to emerge from Africa almost a million and a half years ago, an event that was followed by waves and waves of innovations in Africa that would result in migrations out of Africa of new forms of bipedal ape, one of which, *Homo sapiens sapiens*, would emerge as recently as 50,000 to 60,000 years ago from Africa to quickly dominate the globe.

This *African Homo sapiens sapiens* was truly an awesome creature. Carrying every aspect of modernity, this new human development was "the better mousetrap". With human language, human spirituality and the ability to mould every aspect of their world and environment, modern humans arrived out of Africa to conquer first the Old World and then, just over 15,000 years ago, the New World.

But fighting, violence and hatred of our own kind are not typical behaviors of humans and are not part of this African inheritance. For almost five decades, studies of chimpanzees, gorillas and orang-utans have led to the realization that most of what we see in humans as "uniquely human" is shared by our closest relatives. They love, hate, murder and even wage war. Chimpanzees also use tools, and over 39 distinct tool and cultural patterns among *Pan* groups have been recognised throughout central and West Africa. We now more clearly understand that many of the things we see as bad human traits are really just longstanding hominoid or ape characters that we have inherited from a common ancestor some 6-million to 7-million years ago. But we humans have evolved away from much of this inherited behavioral pattern, and the evidence is in our bones and teeth, in particular those short canines.

It was once thought that our human origins had been bathed in the blood of our species, that we originated as a killer ape that held no sanctity of life for our own or others. Raymond Dart, a scientist who founded African paleoanthropology at the University of the Witwatersrand where I now teach, was one of the most ardent supporters of this "killer-ape" hypothesis.

Scarred from his experiences in World War I, he developed, between the 1920s and 1940s, what became known as the Osteo, Donto, Keratic culture of early humans; Osteo for bone, Donto for tooth and Keratic for horn. These three terms referred to the bones Dart had found at the Makapansgat limeworks in the then Northern Transvaal. He postulated that the origins of humanity had been bathed in the blood of vicious, killer ape-men using bones, teeth and horns to savage prey, and each other. This theory of a bloodthirsty, murderous origin of our species inspired such imagery as the opening scene of Stanley Kubrick's 2001: A Space Odyssey, where the ape-men use bones to bludgeon their enemies to death.

But the work of anthropologists, paleoanthropologists and primatologists through the subsequent years has shown that for humans this story of our origin is simply not true. Dart's theory was later overturned by the work of Bob Brain, who showed that the bones of Makapansgat were just the remains of carnivore feeding. If anything, we now know that humans are the most peaceful of all primates, maybe the most peaceful of all mammals.

Every time I say that to students I can almost hear many of them saying, "but wait a second, what about the wars, what about genocide, what about acts of terrorism like September 11th?" But then I point out that you can see the fact of our peacefulness in the evolutionary design of our bodies themselves. In even the very earliest fossil human ancestors found, dating back to 6-million years, we see what I feel are dramatic physical changes indicating an alteration in behaviour towards co-operation and away from intra-species conflict.

This is of course seen in such areas as the reduction of canines, showing that there was a clear need to change the way we interacted with other members of our own species. The large canine teeth of all other primates are not solely defensive tools against predators, but are in fact most commonly used in displays and fighting with other members of their own species.

No other ape, and indeed no other primate, has reduced their canines to the degree seen in even our earliest ancestors. This simple morphological shift in our lineage is a critical change that indicates one of the primacies of our character: support for and peaceful interaction with members of our own species.

There are many other inherited physical characters like this in our family tree: a low degree of sexual dimorphism, our facial architecture and musculature designed to smile, the list can go on and on. We, who study the origin of our species, can see human co-operation as a driving force in our evolutionary success. The need to co-operate and work together to survive the changes in Africa between 3-million and 2-million years ago that resulted in the origin of our genus Homo, was fundamental to our survival. To live as a rather defenseless ape in this harsh, changing African environment without sharp claws or teeth required us to change normal primate behaviour.

Not only that, to maintain cultures and languages over millennia required our ancestors to move away from the behaviour typical of other animals and to greet other members of our species with support and goodwill, not violence and dominance. To share as a community in the raising of our long-dependant children, teaching them through human language and, by example, what we humans feel is right from wrong.

A mere 150,000 years ago we arose as modern humans in Africa, not with dramatic physical changes making us stronger and tougher, our arrival was signaled by a reduction in size, the appearance of more childlike features than those of our ancestors and, in our cultures, an awareness of mortality and human compassion, signaled in acts such as burial of the dead and the origin of art.

Most people start thinking of all the examples where humans have dealt mass destruction toward their fellows. But I pose to these Doubting Thomas's the following question: can you name another primate, and possibly even any other mammal, where you could take males and females from different populations or different geographical regions that have never met and put them in the same room together and lock the door and anticipate, that when you opened the door, they would all be sitting peacefully together?

One can certainly undertake this experiment with humans, we do it every day. I wouldn't recommend trying it with any other mammal. Peace is our African heritage.

I looked up at those baboons as they looked down at us. Cooperation. That was going to be the key to getting through this Gorge.

'Alright you baboons.' I turned to my colleagues. 'Whose got the ropes.'

Two hours later we fell exhausted onto our packs at the beach below Lookout point. Our tracks from the day before were still fresh and clear in the sand. We had come through the boulder field in great time compared to our work yesterday. No injuries. Just six tired men.

'Let's break for an early lunch. I want to scout ahead.' It was only 10:30 in the morning but we had almost had a full day. The river crept right up to the sides of the Gorge leaving only a few meters between the edge of the water and the sheer cliff. Smaller boulders filled this space. How hard would this be to cross. We had about three hundred more meters between the beach we were on and the next corner where the river seem to turn right around a high prominence. The map was of little help. All it showed was the steep contours of the valley with the river right at the wall's edge. For at least the next few kilometers the Gorge looked like a snake. Where would we camp tonight?

As I pondered the way ahead, I got up from the sand and wandered over to the base of the cliff. A small spring was flowing down from the top of the Gorge, its trickle having created a mini tropical area on the otherwise bare rock. As I approached the trickle, I realized that the vegetation was hiding a different type of rock to the sandstone that had been common throughout the journey. It was a reddish grey rock of some sort. Getting closer, I realized what it was. A mudstone. Lying conformably at the base of the sandstone. This had to be the Triassic mudstones that Euskelosaurus had come from on the South side of the river. I called the others over to see as I climbed on to the slippery rock. This would be an ideal place to find prosauropods or pre-dinosaurian reptiles like Euparkeria. This was also an important geological point. We were standing exactly on the Jurassic – Triassic boundary and based on recent dates from North America, that would place this point at about 202 million years.

I crawled up to the contact point and put my hand on the spot where the mudstones abruptly gave way to sandstones. At this point, just over two hundred million years ago, the lush, wet conditions that lay down these mudstones gave way to the harsh desert conditions that characterized the next tens of millions of years. What caused the dramatic change at this boundary? We really didn't

know, but what I could clearly see in the rocks in front of me was that at least in this area it had resulted in change from a wet climate to an arid one. .

The finding of these rocks and the possibility of getting good fossils in them revived everyone and we spent a busy half an hour scouring the mudstones with no luck. Nevertheless, we now knew the sediments were here and the potential of finding both Jurassic and Triassic forms on this expedition had dramatically increased.

Rather reluctantly I called off the search in favor of moving up river. Judging by the dip of these sediments, there was a good chance that we would find plenty more exposures as we worked our way westward. Additionally, I was not sure how hard the route ahead was. I could see the corner where the river meandered out of site, but didn't know whether we would have to make a river crossing or not, or if we would encounter another boulder field. I ensured that the location was properly mapped and that both Pedro and Gary had taken GPS readings and we set off. But as with most fossil bearing areas, where there is one good exposure, there are many.

After clambering over a small boulder field, a piece of cake after the ordeals of the morning, we encountered a broad exposure of the Triassic mudstones that ran right to the edge of the prominence ahead. It was too good to resist. Everyone scattered here and there, looking for telltale bones in either the mudstones or overlying sandstones.

'Over here!' It was Gary, the irascible dinosaur hunter. I had only shown him what fossil bones looked like a few months earlier yet he was already one of the best natural talents that I had yet to meet.

'What have you got?' I enquired as I worked my way up the slope towards him.

'It looks like bone. A big one.'

As I reached him I realized that he had indeed found a large bone fragment. Either a pelvis or scapula. It was also very large. Maybe a third of a meter and it was just a fragment. This was the best find of the expedition so far. It was, however, clearly in the Jurassic sandstones as it was encased in a huge flat chunk of debris that had fallen from the cliff above. I scanned the rest of the block. More bone. Big and small fragments. Was that part of a maxilla, the upper jaw bone, with tooth sockets? Yes, I was pretty sure it was. I looked up the side of the cliff from where the block must have fallen.

'It couldn't have come far.' Steve noted. Scanning the cliffs above.

'I agree. I think it probably fell from that ledge right there.' I pointed to a prominence that had the same color sandstone as the block. The spot was maybe fifty meters above our heads.

'We wont be able to get up there without better equipment.' Pedro noted.

'Ok, lets map the site and we'll come back from the top at some point.' The guys set to work locating the site on their GPS's and the map. I looked around at the Gorge. There could be worse places to find dinosaurs I suppose.

Twenty minutes later we were at the promontory that had blocked our view from the river ahead. Fortunately, it was not going to require a river crossing as the river cut sharply into the opposite bank leaving a small beach on our side. Most remarkably, at the base of the cliff there was an enormous rock shelter. Could this be the human occupation site I had been hoping for? We dropped our packs and scrambled inside.

It wasn't to be. Thousands of years of floods had scoured the inside of the vast rock shelter clean. If there had been human or even pre-human occupation in this shelter, the evidence would be kilometers downstream. Probably scattered from here to Mozambique. It was clear that great volumes of violent rushing water had crashed through this opening and swirled around inside. The walls were as smooth as porcelain. The only signs of life were the prints of leopards who had probably sheltered occasionally in this cave. There was no real way to tell how old the prints were as they were protected from the elements, but since we knew leopards lived in the area it wasn't really surprising.

Leopards love caves at any time. I had studied a female leopard on the Witwatersrand that left the remains of more than fourteen animals she had killed in a cave. She would use the cave as a substitute for a tree. It also made a good breeding lair and I had even made the mistake of crawling into the cave while her cubs were there. I had dropped down through a small gap in the ceiling only to be confronted by two small cubs and a very angry mother. She had charged at me from about fifteen meters. Spitting and snarling the whole way before breaking off the attack and scrambling out another entrance. I beat an equally hasty retreat out the way I had come, a little wiser and a lot more

cautious. That was one of two close encounters I had had with these graceful cats in the confines of a cave and it made me a little wary of dark spaces in rock shelters and caves like this.

'Hey, more bone!'

It was Gary again, calling from outside, with another batch of dinosaur bones in sandstones. I looked around at the cave once more before going to see these next treasures.

For the next hour we made slow but steady progress. Interrupted at times by the discovery of a dinosaur bone fragment here and there. All in the Jurassic sandstones and nothing yet in the Triassic sediments which was at the base of the cliff the whole way. The going was moderately easy. We had a small beach that only had limited rubble from the cliffs above. The mudstones seemed to give us a slight shielding effect from large boulders as it seemed that when they dropped from above instead of stopping in soft river sand they skidded off into the middle of the river. Our luck only could hold out so long though in these conditions and it wasn't more than a kilometer before we reached another turn in the river with a large promontory that had water right to the base. I looked at my watch. It was one o'clock in the afternoon. Looking around at the team I could see that they were exhausted. I took in the terrain around us. This was not a great place to camp. There firstly were no flat surfaces and secondly we were horribly exposed. The hippo and croc tracks on every muddy or sandy patch reminded me that this was a well traversed route we were standing on. The last good campsite was the beach, more than an hour and a half behind us. There was no going back that way. I told the men to take a break as I pondered the situation. Gary and Steve walked up beside me.

'I don't fancy climbing that.' Steve noted as he looked up at the towering promontory above us. It wasn't that high, maybe sixty meters at its shortest point, and it looked like I could climb parts of it with ease, but it would require man-hauling the packs up by rope to the top. A task I didn't relish after the exhausting morning.

'What about the water?' Gary asked, he was leaning out on a rock ledge, trying to judge the depth of the pool at the base of the promontory.

'Well, there's that to contend with.' I handed him my binoculars and pointed downstream at the opposite bank. There, about two hundred meters down, a four meter crocodile was sunning itself on a small sandbar.

'At least we can see him.' Gary quipped. I grunted in agreement and looked at the cliff above us. What was on the other side? I also had to weigh up the risk of injury. As tired as everyone was, someone might make a mistake and end up falling. A broken limb here would be a disaster for the expedition, and possibly even fatal for the individual.

' I'm going to climb up along that ledge.' I said to Gary and Steve, indicating a small prominence that jutted out over the water. It would give me an overlook of the pool and might give me a view around the corner.

A couple of minutes later I was up, with a spectacular view of the river on both sides. I could see downstream from where we had come, Lookout Point and the end of the boulder field still visible. Ahead the river straightened out for about two kilometers. A wide, vegetation covered bank was on our side. It stretched for nearly a hundred meters before meeting the cliff face. In addition, the height of the cliffs was getting lower. From the several hundred meters below the lookout there was now only about a hundred and fifty meters of height. Best of all, I could see a beach about a kilometer up that looked like it might make a promising campsite. I crawled my way as far out onto the ledge as was possible trying to get a look around the corner at the back of the prominence but with no luck. It was clear however that the prominence I was on was a big outcropping of sandstone and that meant that the far side probably wasn't much different to this side. Sheer and difficult to climb. I looked over at the croc. The big reptile still lay placidly on the bank. Ignoring my presence. The water directly below me looked to be about a meter deep and I could see that it was part of a shallow sandbar that extended out into the river for about fifteen meters before dropping into deeper, darker water. There was one deep hole at the very base of the cliff directly below me, but if you stayed about two meters away from the rock edge you could skirt around it. Scanning the water I saw no signs of other crocs, but of course that didn't mean a thing. I sat for a moment looking at the water before making my decision.

After coming down I gathered everyone around me. 'Ok guys here's what we're going to do.' I gestured at the water at the base of the prominence. 'I'm going to climb back up to that ledge where I was, but with the rifle. You guys are going to cross as a group below me. I can cover you from crocs. Then I'll cross.'

"Why don't you cross with us?' It was Godfrey.

'I want to keep a close eye on our friend over there.' I said, indicating in the direction of the big sleepy croc. He nodded in agreement. I outlined the path I wanted them to take around the deep section near the base of the cliff. Picking up the rifle I climbed back up to my lookout point. I chambered a round and then put the safety on.

'Ok guys'

Shouldering their packs and with some nervous banter the group waded into the cold water.

It was almost surreal sitting up above, watching over the group. Each individual watched the water nervously, paying particular attention to the darker, deeper patches near the middle of the river. I peered around them, looking for tell-tale signs of movement or a dark shape under water, but none appeared. Within a minute and half they were across, moving just out of my site around the corner of the prominence. I glanced up at the spot where the large croc had been lying. It was gone. Well, there was nothing that could be done about that.

I climbed down from the rock and stepped into the cold water, keeping my eyes on the area directly around me, occasionally glancing back in case something was coming up behind me. Glancing ahead I saw that Gary and Steve had climbed onto their side of the prominence to have a better vantage point. In almost no time I was across and had joined the others. Looking back at the water I sincerely hoped that this was the last crossing we would have to make. The short crossing were wearing on my nerves.

Ahead of us lay new terrain. The valley was beginning to widen again and vegetation now covered the hundred meters of gentle slope that extended from the edge of the river to the steep valley side. The South side of the river had little bank, rising steeply up a couple of hundred meters of cliff. However, the sides of these cliffs were not, for the most part, as sheer as we had seen before and scattered patches of more tenacious vegetation clung to the sides.

As we started out, we at first resumed old habits, trying to cling to the edge of the river, but large boulders that clustered along the edge made the going difficult.

'Why don't we move inland a bit and see if we can find a hippo trail up there.' Gary suggested. It seemed like a good idea. We were making slow and difficult progress near the river, maybe it

would be better fifty meters inland and with any luck there just might be a large hippo trail like we had traveled on at the mouth of the Gorge on the first day.

Moving into the tall grass we soon found that the larger boulders were packed next to the river and only smaller two and three meter boulders were hidden in the tall grass. We made good progress for about a hundred and fifty meters, although the sun was already hidden behind the cliff and I began looking ahead for the sandbar or beach that I had seen from the prominence.

'Snake!' It was Stuart, the third man in line. Everyone froze. I slowly turned around, looking back at Stuart who, to my horror, was point at Steve's feet a meter or so behind me.

'Don't move.' I said, peering into the grass trying to see the reptile, but with no luck.

'What kind is it?' I asked Stuart, no one else could see the animal either.

'I'm not sure, but I think it's a puffader.' That was both good and bad news. The bad news is that puffaders are highly venomous snakes. Their venom is cytotoxic and they tend to inject huge quantities of venom when they bite. They are responsible for more bites on humans than any other snakes in southern Africa. This is because they lie immobile in high grass, just like we were in, and unlike other snakes, who tend to flee at the approach of humans, they stay still. The good news was that if we hadn't been bitten already the odds were that we weren't going to be as they are not a particularly aggressive snake, tending to bite only when trod upon.

Gary moved forward from the back of the group, peering cautiously ahead into the grass. Steve and I still had not moved a muscle, as neither of us had as yet seen the snake.

'It's a puffader all right. And a big one.' He leaned over and moved the grass aside with a stick. Revealing the large coiled adder, half a meter from Steve's foot. Steve slowly backed away to stand beside me as we both peered at the serpent. It was beautiful in a terrible way. About a meter and a half long, it was about as big around as my arm. It lay coiled into a tight spiral, its head facing Steve and I. As we peered at the snake, I noted both our footprints. The snake partially covered maybe a centimeter of either Steve or my print. We had actually stepped so close to the snake that we had practically pushed it aside!

'You both practically stepped on it.' Stuart illustrated. 'It was only when Steve boot pushed the grass down from around it that I saw it.'

'That was a great spot.' I said. Truly grateful that he had seen the snake. The last thing we needed out here was a snakebite just as the sun was going down.

'Well he certainly saved all of you guys.' Steve joked to Gary, Pedro and Godfrey. 'But I kind of wish you hadn't told me.' I sort of felt the same way as I looked ahead of us at the hundred and fifty meters of dense grass and vegetation between us and the first signs of clear . I would almost rather not know that this area could be filled with snakes that we had almost no chance of seeing.

Over the next twenty minutes I learned that you could boulder hop in thick grass without ever having to touch the ground if you really try hard enough. We reached the sandbar at the edge of the river with a great deal of relief. None of us particularly wanted to walk any longer in thick vegetation. Even wading in the water with the crocs seemed, at that moment, preferable.

Trudging up the sandbar I looked over this flat beach. We were about halfway down the straight. The river looked deep and calm here. Ahead, a small rapid disrupted the flow of the water. To our right was the thick vegetation, but there were a series of large boulder between us and it. The area had decent soft sand. It wasn't the perfect campsite, we were too close to the water for my liking, but it was protected from any animals that might be moving in the grass and woodland nearer the base of the cliffs. I told everyone to drop their packs and take a rest while I scouted ahead to see whether there were any better sites in the immediate vicinity. Climbing over a small group of boulders adjacent to the small rapids, a large flat floodplain opened up. Short green grass covered its wet surface. Ahead, about a kilometer away, was another prominence which stuck out into the river, blocking our way forward. As I watched, several dark shapes rose in the water about three hundred meters up from my vantage point. Hippos. That decided it. We were probably going to have another difficult crossing at the prominence and the floodplain ahead was no place to camp with hippos probably feeding there all night. The sandbar was going to be our best option.

Thirty minutes later the camp was up, firewood had been gathered and everyone had scattered around to either relax, work on their kit or rummage through their Rat packs. I took my binoculars and journal and wandered downstream to a large rock that jutted out into the middle of the river. Its top was still in the sun and it looked like a great place to sit and write. I climbed up to the top of the boulder and sat, ten meters above the water. Very little moved. The croc that we had

seen had not shown himself again. He was clearly around, but had decided to remain invisible for the time being. I found a flat spot on the rock to sit and write. Looking around, I noticed white dung on the rock. It was from a leopard who had clearly made a meal of a hare up here. Well, it certainly was a good spot to sit and eat, giving me a view of the whole river up and down for maybe a kilometer in both directions. I reminded myself to tell Pedro about the coprolite. I started to jot notes about the day in my journal. As I wrote, I could hear the soft banter and laughter from the camp a couple of hundred meters away. We'd made reasonably good progress that day, but the snake had unnerved me a little. I couldn't help but think what a disaster a snakebite would have been. It could easily have been fatal under these circumstances.

I wondered what tomorrow would bring. The prominence ahead promised either another river crossing or a climb. Neither of which I looked forward to. Nevertheless, the terrain before this obstacle looked more promising. The valley was clearly widening and we now had a sort of beach to walk on. As long as the river didn't meander back in our direction creating a sheer cliff in any spot, we would be all right from here on out. We still had, by my calculations, at least eight to ten kilometers to go, but both the map, and the terrain I was looking at, indicated that the going might be easier from this point onward. It was my hope that we could make the head of the Gorge by late tomorrow afternoon. As the valley walls became lower, we would gain more daylight to hike in, thus we should have at least ten to twelve hours of walking time tomorrow.

Putting my journal down I picked up my binoculars and scanned the cliff walls and the bank on the opposite side of the river. Every few meters were long furrows cut into the bank. Signs where crocs had slid from sunning spots into the water. Some were big and others were small. There was clearly a hefty population in the area. I reminded myself to re-state the "no going near the water" rule. We were especially vulnerable when filling our canteens, much like an antelope going to the river to drink.

As I scanned up the bank I noticed something out of place. It was a small object that was clearly man-made, sitting just opposite our camp. At this distance I couldn't quite make out what it was but it was positioned immediately next to a large crocodile slide.

A short while later I wandered back to the camp and pointed the object out to Steve and Gary.

'It's a shoe.' Steve said as he scanned the object through his binoculars. Everyone gathered around looking at the first definitive remains of other humans presence since we had entered the Gorge. It looked like a simple blue or black tennis shoe. A "takkie" in South African lingo.

'Its been eaten.' Pedro noted. It had, the one side, near the ankle, had been ripped away.

'How do you think it got their?' Godfrey asked. None of us answered. It was clear that this had not been brought down by the river. A shoe like that wouldn't last long at all. Its position on the sandy bank, just a couple of meters above the water, also argued against this. Its situation next to the crocodile slide spoke of the possibility of something more terrible.

'Maybe a refugee?' I asked softly of Gary who was standing next to me.

'Probably.'

We all stood, staring across the short expanse of water at the shoe as the sun set. Africa could be a very hard place indeed.

When the sun set it became extremely dark. Not just the dark of the nights before but *extra* dark. Clouds had moved in blocking the stars, and moon was not due to rise for several hours. We sat, huddled closer to the fire than we had on previous nights. Not speaking much. Every now and then someone would peer into the darkness behind them. I didn't know if it had been the events of the day - the water crossing, the snake, or the shoe, or whether it was the exposed position we had on the beach that was making everyone nervous. I even kept the rifle leaning against me as I sat in the sand. Everyone expressed an interest in an early night, but no one seemed interested in getting up from the fire. Nevertheless, by eight o'clock everyone had gone to bed except Gary and I who sat, talking softly as the moon began to rise slowly over the hills just as the clouds began to clear slightly, as if pushed away by the glowing orb. And as they cleared the temperature began to drop.

'Its going to be a cold one tomorrow.' Gary noted, gazing into the sky.

'Let's turn in." I suggested standing up and brushing sand off of my clothes. 'Tomorrow is going to be our longest day.'

8

Back in Big Five Country

'I'm freezing to death!' It was Gary huddled next to the small fire. He was looking particularly miserable. The morning was cold and steam rose from the river next to our camp. The clouds last night had brought a cold front through and temperatures had dropped to around six degrees. Freezing for the subtropics. Gary, who was used to the warm climate typical of the area, was suffering more so than the rest of us in the chill of the morning air.

'I hardly slept' he complained. Leaning closer to the fire. 'My sleeping bag was useless.' I grinned at his complaints as I watched the others emerge from their tents and begin their morning ablutions. It looked like a great day. The front had pushed through and the skies were clear. Although it was chilly, it would make mid-day a pleasure to walk in, so the cold augured well.

'Let's get the camp down as quickly as possible. I want an early start.' I said to all as I unscrewed another can of bully beef. This was one of the few I had eaten during daylight hours. Bully beef was somehow more palatable in the dark.

An hour later we were half a kilometer upstream and standing facing another cliff that jutted out into the river. Crocs sat motionless on the far bank. They were either completely disinterested in us or too cold to move. I looked closely at the base of the cliff. The water was probably only half a meter deep. It looked crossable. By once again crawling up to an overlook, I was able to watch over the group with the rifle as they crossed beneath the cliff. The two big crocs watched disinterestedly. I jumped down and into the water as soon as the others had reached the safety of the shore on the other side of the cliff. As I reached the group a couple of minutes later their expressions were downcast.

'What's up?' I asked, sitting down to put my boots and socks back on.

'Look ahead' Steve answered while indicating upstream. I let out a groan. There, not two hundred meters up was another cliff, only this one looked to extend farther into the river than any other had.

'Damn'

'I wonder how many of these we have in front of us?' Gary asked of no one in particular.

'Maybe a few.' I replied. 'There are no big game tracks.' I gestured at the sandbar we stood on. There were the tracks of the usual suspects. Crocs, a set of leopard prints and a couple of old hippo tracks.

'Whatever's up ahead is keeping the big animals out. That probably means cliffs and deep water.'

A few minutes later we were standing at the base of the next cliff.

'I'm going to have a look.' I told the group, dropping my pack and crawling out onto a ledge above the water. It didn't look good. I made it maybe fifteen meters along before having to stop. Two things were clear. This was the biggest cliff yet. It was at least a hundred meters wide, twice the size of anything we had encountered before. Added to that, the water at the base of the cliff was clearly deep. I couldn't see the bottom and the water moved sluggishly against the rock. I gazed upriver. The Luvuvhu was widening out again. Clearly these prominences were acting as a sort of

dam before the Gorge narrowed behind us. This made the river deeper and slower ahead. I looked at the cliff towering above me. It was maybe a hundred meters high. There was no way we could climb its nearly vertical face. It was also clear that the river was un-crossable at this point.

Rejoining the others I explained the situation and we began looking for solutions. I wandered back downstream about fifty meters looking at the Gorge wall on our side of the river. There in front of me was the answer. A fault had made a small cut up the side of the Gorge for eighty meters or so. It was probably five meters wide and went up at about a forty-five degree angle. It was filled with a tangle of vegetation and loose rubble. It looked like a tough, horrible journey up but we didn't have a choice.

'We go up here.' I called the rest of the group around me. They looked dubiously at the small fault in the wall of the Gorge.

'Are you sure?' It was Stuart. I could see by his expression, and that of everyone else, that they were thinking about our ill-advised climb on the first day.

'I don't see any other options.'

So up we went in single file. I led. I was forced to use my rifle at times a lever to hoist myself over loose rocks. The vegetation was an enticing mixture of thorny plants and latex plants. Halfway up, there was a section of extremely loose shale that skittered away under my feet and caused a mini-avalanche. Small rocks spat on those below.

'Let's move apart. I don't want anyone getting a rock on the head.' Godfrey, who was right behind me stopped for a moment allowing me to climb another fifteen meters and clear the loose shale before he started his climb. Each man in turn followed at a safe distance. The climb was hard, but at least we were fresh.

On reaching the top, I found myself alone in a woodland for the first time in three days. It was strange to not have cliffs towering over me. The diversity in the vegetation was terrific. There were only a few places I had been where so many different species of plants were crammed into one place. I started counting the species in my immediate vicinity, stopping at twenty. This sort of diversity often astounds first time visitors to Africa, particularly those from Europe or North America where plant diversity is comparatively low when compared to Africa. This diversity in Africa is brought about by

a couple of things. First is the equatorial position of Africa. It's the only continent that straddles the equator with significant amounts of land both East and West along the equator, but also North and South. This position creates ecological diversity as one moves from the tropical areas at the equator towards the more temperate areas to the extreme North and South. Additionally, its Africa's sheer size. It's the biggest continent by far when habitable land is considered. In fact, Africa represents something like one-third of the habitable land mass of the planet.

People are often surprised at this fact as they are either fooled by two-dimensional Mercator conformal projection maps, which expand and distort the size of areas away from the equator in order to project the land surface of the Earth onto a flat piece of paper or, conversely, they just don't believe it.

The key to the statement of course is the term "habitable" and it is strictly considered from a human perspective. I tend to define this as the removal of Alpine regions, deserts, tundra and water covered areas where humans really haven't lived in any significant densities until very recently. Thus areas such as the Himalayas, Andes, Siberia, the central Sahara and Antarctica are "uninhabitable" by this definition, with apologies of course to the people that actually live in these places today.

I looked towards the top of the Gorge. The hill sloped moderately steeply away from the river. There was still another two or three hundred meters of elevation before one would reach the very peak of the Gorge, but it looked passable. I wondered over to the edge of the cliff to look ahead.

'Damn.' It was Pedro, he and Godfrey had walked up behind me and were looking out at the river ahead. The site was not encouraging. We were standing on a high prominence which dropped away into a small valley. Not a hundred meters ahead of us, another cliff began. It was just as high as the one we were on and where it met the water it stopped in a sharp vertical cliff. Even from here I could tell that the water at the base was too deep to cross. We were going to be forced to climb down from this prominence to the beach below and then climb up the next in the same manner. This was not turning into the easy day I had hoped for.

As the others joined us one by one we sat and looked at the cliffs ahead.

'How many are there going to be?' Someone asked. The answer would be four.

Five hours later each and every one of us was ready to collapse from exhaustion. It was nearly noon and we had gone up the walls of the Gorge four times and down four times. Each passage seemed more difficult than the rest and the fact that our first glimpse over the top of a prominence always showed another a few hundred meters ahead was demoralizing. But now we were through, I thought. Ahead of us a large flood plain opened up giving a flat area of maybe four or five hundred meters before the Gorge walls started. Ahead, about a kilometer and a half, there was one large mountain that came back to the edge of the river.

'Is it the end of the Gorge?' Steve asked, coming up beside me.

'I think we're close.' I said, as I pulled out the map and the GPS. After fixing our position, I decided that we were about four kilometers from the technical end of the Gorge. 'That mountain must be this one here.' I said to the group, indicating the position on the map. 'Once we get around that, the valley opens up. That's pretty much the end of it. '

'Outpost is here.' Gary indicated a spot about two kilometers past where I had indicated. *Outpost* was a luxury safari lodge built near the head of the Gorge. It was one of the emergency points I had noted before beginning the expedition. 'We could have cold beers by this evening!' I grinned at his enthusiasm hoping he was right.

'Buffalo!' It was Pedro, pointing at the floodplain ahead. I could just see a lone bull move into some dense bush maybe a kilometer away.

'We're back in big five country!' Stuart said, high fiving with Godfrey. 'If they can get in, we can get out!'

I watched the group's mini celebration. I shared their enthusiasm at being so near the end of our trip, but my enthusiasm was tempered by the presence of the buffalo. If there was one there would be more. I had, over the last couple of days, had the luxury of not really having to worry about dangerous animals while walking. But now, if there were buffalo, there were sure to be elephants and probably lion. We were going to have to be extra careful from now on.

I briefed everyone again on the dangers of walking with dangerous game and what to do if we walked into a problematic situation. Confident that everyone was ready, we started down into the valley ahead.

It was strange seeing the signs of elephant, buffalo and lion again after so many days without seeing anything. It made me much more aware of the impact of these animals on the environment. Here and there trees had been pushed over and stripped of their leaves. Their shattered trunks a reminder of the power of elephants and what sometimes seems like the wasteful behaviour of these great animals. But in most situations where their populations are not completely out of control, this apparently destructive behaviour actually opens up more grasslands while at the same time it brings the leaves into the reach of the smaller browsers who would not normally be able to access this resource at the top of a tree.

The smell of big game also permeated the air. By its absence, our noses had been sensitized in the Gorge to the pungent musky odours of these animals. We could always tell when we were approaching a buffalo as we could almost always smell the animal first before hearing it crash off ahead. Fresh dung was everywhere. We moved cautiously through the valley floor, meandering our way around clumps of trees and through small clearings of grass. It was strange sensation not to have the towering cliff walls around us. I glanced down at a plate sized track of a buffalo. *Syncerus caffer*. The enormous cow-like print was so fresh its base was still moist. By its size, and that it was alone, I suspected that it was the track of a lone old bull – a "dagga" boy in bush lingo. Dagga means 'mud' and is a term given to old bulls who are often covered in a thick layer of mud, rolled in to act as a fly repellent and to cool the dark, black animal. I stopped to closely inspect the surrounding bush. Single buffalo are potentially dangerous animals. Buffalo in herds , on the other hand, are generally like cattle. Docile unless stampeding. But a bull can weigh 600kg and have a horn spread of a meter or more. Surprisingly, the extant buffalo is not the largest hat has lived. An extinct species, *Pelorovis antiquus* was more than one and a half times as large and has horns that spread to almost three meters.

Pelorovis fossils can be found throughout Africa but the truly giant specimens come from the great grasslands of the Free State of South Africa. I have found pieces of their horns that are as big around as my thigh and look something like a long elephant tusk. These great animals only went extinct ten thousand years ago when mega-fauna around the world vanished due to unknown causes.

We finally reached the base of the big mountain that we had seen from the far side of the valley. It was steeper than it looked from afar. The entire side was covered by dense vegetation.

Towering trees hanging precariously to its steep sides. The mountainside forest started at the very edge of the Luvuvhu and continued nearly to the peak of the mountain, a peak that was dominated by a great bald sandstone dome. The whole hill was about three hundred meters tall. It extended from where we stood for about five hundred meters along the edge of the Luvuvhu, at which point we could see another flood plain beginning. I opened the map again. Placing my finger on the mountain I dragged it westward till the contours opened up. 'The other side of this hill is the end of the Gorge. We'll make camp in the first decent site on the other side.' On the map, the floodplain we could just see spread out away from the Luvuvhu, meeting smaller rolling hills.

'What do you think?' I asked the group in general. 'We can either climb directly up and over or try to find a trail along the base, near the river.' The lower route, to me, looked the best but it was clear that if their was a cliff hidden in the vegetation it would block our passage. The river had widened out to about 100 meters and had taken on a slow, sluggish appearance. It was certain that we would not be going into the water here. As if to emphasize the point, a huge crocodile slid down out of the vegetation a couple of hundred meters in front of us and cruised slowly into the middle of the river.

'I think that we should take the lower route.' Steve said, after looking over my shoulder at the map.

I looked around at the open country. 'Ok, but lets be careful. All kinds of animals could be in that thick bush, not the least of all snakes.'

We started down towards the river looking for a trail, but without any luck.

'Let's go in a bit and see if we can find anything.'

Twenty minutes later I was beginning to have serious doubts about our decision. We struggled through hanging liana vines, latex plants and generally thick bush. The hill was also steeper than it looked, the vegetation had masked the forty-five degree slope nicely. As we worked our way further along the side, it became clear that we would have to move higher onto the mountainside if we were to make any progress. In addition to that, a sharp cliff marked the mountains point of contact with the river. So up we went. Struggling against the thick bush. Up fifty, then a hundred meters. All we encountered was dense jungle.

As we stopped for a break, Godfrey grabbed a vine. 'Eawooo! I'm Tarzan!' The tall black Tarzan sat down quickly after almost falling off the mountainside. I picked up a handful of rotting leaf litter and threw it at him.

'You make a lousy Tarzan G-man!'

Steve laughed as Godfrey ducked my loose handful of missiles. 'You ever see those old Tarzan movies where they had South American spider monkeys and tigers in Africa?' Steve asked, while grinning at Godfrey's antics. Godfrey slid down beside us. 'How do you know they were South American monkeys?'

'South American monkeys are Platyrrhine primates, the African ones are Catharrine primates.' Steve began his explanation on the differences between the two. Godfrey sat entranced. Steve was well qualified for such a lecture, being associated with the Duke University Primate center, one of the top Primate research and breeding centers in the World, and it was an interesting question that Godfrey had asked.

As Steve pointed out to Godfrey, South American monkeys are known as Platyrrhines, or more commonly, "New World Monkeys" and differ considerably from their "Old World" cousins the Catharrine monkeys, having evolved largely in isolation. The name Platyrrhine derives from the broad, flat shape of their external nostrils. All Platyrrhines are small, the largest is only around 10kg. They also exhibit many primitive dental and skeletal features including having three pre-molars. In contrast, Catarrhines (narrow nosed old world monkeys) have, like us, only two pre-molars.

All Platyrrhines have a tail of some sort and five genera have prehensile tails, the most well known of these probably being the spider monkey of old Tarzan movie fame. What interests some of us who study Primates is why are there monkeys in South America at all? They really shouldn't be there and primatologists and palaeontologists don't know how they got there.

Primates, which in living diversity include, prosimians (galagos, lorises, lemurs and tarsiers), platyrrhines (New World monkeys), catarrhines (Old World monkeys) and hominoids (apes and humans), have their origins in some type of an insectivorous mammal that lived in the late Cretaceous, an epoch which ended 65 million years ago with the extinction of the dinosaurs. The earliest possible primate discovered so far comes from North America and is about 60 million years old. Named

Purgatorius, this tiny insectivore is only loosely morphologically allied with later primates. There are possible older *Purgatorius* specimens going back into the latest Cretaceous, but most are from dubious context. It is only in the late Paleocene (about 55 million years ago) that we see more numerous remains of primate-like animals appearing in the fossil record.

Known as the Plesiadapiforms these near-primates appear to have evolved in North America and Europe. The Plesiadapiforms radiated into many different niches, but in the early Eocene (about 45 to 50 million years ago), it seems that the rise of rodents caused a rapid decline in the number and diversity of Plesiadapiforms. But Plesiadapiforms are probably not the ancestors of living primates, as they possessed too many specializations to have given rise to the first Prosimian primates that would appear a few million years later. So at this time, the only primate-like mammal that is a firm candidate as ancestor of all higher primates is the tiny *Purgatorius*.

The first true, Prosimian primates appear, and literally explode in diversity, in the early Eocene Epoch (between 54 and 38 million years ago). Eocene aged Prosimian primates are commonly found in North America and Europe and more rarely in Asia and Africa. No early primates have ever been found in South America or Antarctica as the former was an island continent, while we have as of yet found fossil deposits of this age in the latter. In these earliest primates the bony ring around the orbit was complete like in modern primates, nails replaced claws and larger brains were evolved. These early Eocene primates were clearly true primates and took two distinct forms: lemur-like adapids and galago- (bushbaby) like omomyids. Although the living forms are different species, these animals descendants can clearly be seen in the lemurs of Madagascar and the galagos, lorises and tarsiers of Africa and Asia.

As the Eocene drew to a close and the Oligocene epoch began about 37 million years ago, the continents were approaching their modern form and position, with the exception of there being no land bridge between South America and North America. The world was however, in a state of geographical transition. India was colliding with the continent of Asia, lifting the great Himalayas. South America and Australia had pulled away from Antarctica and formed independent island continents. Deep water currents could thus circulate around Antarctica, bringing cold waters northward and subsequently cooling the oceans of the world. At the same time, the rise of the

Himalayas blocked the northward curve of the jet stream, changing the climate south of this great mountain range.

Primates in Europe suddenly go extinct while in North America their fossils become increasingly rare and there is a general decline in mammalian diversity. Up until recently the global climatic changes of the early Oligocene have been blamed almost wholly on the mammalian extinctions that occurred at this time, but in November of 2001, scientists from the United States Geological Service announced that what was previously thought to be a relatively small extraterrestrial impact in the Chesapeake Bay area was in fact quite large (around 137 kilometers in diameter), and struck at approximately 35 million years ago, right at the point of extinction of many of the North American primates and at a point of general loss of mammalian diversity One has to wonder, when combined with the global environmental changes, whether this bolite strike was the proverbial straw that broke the camels back.

But why then are there monkeys at all in South America? Prior to about 30 million years ago there are no primates or even primate-like animals in South America. Around 25 to 30 million years ago a wide variety of new forms of mammal suddenly appear in South America but no one knows where they come from. Among the new forms are rare fossil primates which look very much like existing Platyrrhines. As the only major difference in continental position between that of today and then was that no land bridge existed between North and South America, any introduction of primates into South America would require some form of open water crossing, possibly rafting on large fallen tree trunks or large mats of vegetation. Because of relatively shallow water in the South Atlantic during lower sea level periods, there were almost certainly many islands exposed between Africa and South America, effectively bringing the two continents much closer together and making potential rafting hops shorter. In fact, most geophysicists suggest that at the time the open water distance between North America and South America was probably greater than that between the latter and Africa!

Predications of current direction also tentatively support a West to East crossing rather than a North to South rafting event. The fossil record also supports an "Out of Africa theory by raft" for the origin of Platyrrhines. At this time, there are simply no known primates advanced enough in North

America to be suitable ancestral candidates of the early Platyrrhines, but Africa has a host of possible ancestral Platyrrhine forms. Further tantalizing evidence of an African connection is the fact that the closest living relatives of South American rodents are the African Hystricids, more commonly known as porcupines.

Of course another possible source for Platyrrhine origins would be Antarctica, but we know nothing about the later fossil record, if it exists at all, of Antarctica at this time. The same may be said about Asia, where there is presently little or no evidence for Platyrrhine origins. And so the great South American monkey puzzle is actually no more complete than it ever was, and the origin of South American monkeys stands as one of the great questions and mysteries of primate evolution.

Some time later, I stopped in the middle of battling my way through a dense thicket. 'This is not going as planned.' I gasped out as we collapsed against the hillside to take a breather. We were perched on the edge of a dry stream bed that had cut its way from the top, gouging a five meter fissure into the side of the hill. Its origins were hidden in dark green vegetation somewhere above us.

'Hey, look at this!' It was Gary and he was holding a rock in his hand.

'What is it?' Gary tossed the rock to me and as it was in flight, I saw clearly what it was as it flew towards me – a handaxe.

I reached out and caught the rock. 'Its an Acheulean handaxe.' I said, rolling it in my hand. The teardrop shape of the ten centimeter tool fit snugly in my grip. 'You know, its always an incredible thing to be the first person to touch a tool after maybe a million years.'

Handaxes are remarkable things. The tool Gary had thrown me had been made between about one and a half million years ago and three hundred and fifty thousand years ago. It represented the "second" stage of complex stone tool manufacture. An experiment that had begun around 2.6 million years ago with the earliest stone age – often referred to as the Oldowan. At first, complex stone tools were anything but complex. Merely sharp flakes from pieces of quartz and other flakable material as well as the resultant cores, hammerstones and other such pieces. But it was a remarkable step, something no other animal had ever accomplished on the plant. Bipedal apes had made the first of a series of remarkable steps towards becoming the amazing creature we are today. They had looked into the future.

The first experiments with stone tools had demonstrated the usefulness of problem solving and visualization for an animal that was not equipped by evolution with claws and fangs, but with the ability to think and, through bipedalism, have the coincidental use of their hands. Shortly after the first experiments in stone tool manufacture, we see the probably not coincidental increase in brain size. An increase from something slightly larger than that of a chimpanzee to, by just after two million years, a cranial capacity almost three quarters of ours today.

The tool I held in my hand on that slippery slope was from the next phase of early stone aged culture, the Acheulean. Named after the first discoveries in France at the site of St. Acheul, the industry is significantly more complex than the Oldowan. Handaxes like the one I held, flying-saucer shaped discoids, spheroids – round baseball like stones probably used as hammerstones, as well as a series of other lithics and tool-making byproducts. As I turned the heavy implement around in my hand it showed the characteristic manufacturing technique of the Acheulean, bi-facial working. The maker had taken flakes first from one side, then the other in an alternating pattern that creates the 'bifacial' effect. The tool was beautiful in its intricate detail, but I had to remind myself that this tool was not made by a human. It was probably made by a species of proto-human called *Homo erectus* or 'upright man'. The first discoveries of *Homo erectus* had been made in Java by the naturalist Eugene Dubois. His finds were the first of many and *Homo erectus* is now known from throughout Africa and around the Old World. We know that this species emerges in the fossil record just after two million years ago and is firmly established as the only species in our genus by just after 1.5 million years ago. Over most of its range, its culture is typified by these handaxes, a remarkable technological breakthrough.

'What were these used for?' Godfrey asked of me as I sat pondering the origins of this tool.

'We don't really know.' I answered. 'But they may have been the sort of Swiss army knife of these early humans.' I handed the tool to him.

'Pretty remarkable that you are one of the first humans that has held this tool since the maker dropped it.' Godfrey slowly turned the well made implement over and over in his hands, running his fingers over the still sharp edges.

'There's more.' It was Steve, meters above us. He was holding more handaxes, crude discoids, other flakes. Gary, Pedro and Stuart were scavenging further and further up the gulley with occasional shouts.

'Here's one!'

'Here's another!'

'I've got one too!'

I looked up the gulley. These tools were not in their original position. They were tumbling down from a site higher up, probably from on top of the mountain. It was typical of this area to see tool sites on the highest points. This was either a factor of ideal positioning, but I suspected that much of the down-cutting of this Gorge by the Luvuvhu river had occurred after these tools had been made. From the surrounding geology I would bet that the Gorge might have been carved as recently as the last few hundred thousand years rather than millions of years ago. The landscape that these *Homo erectus* had looked out upon had probably been very different from that we looked upon today.

We spent the next fifteen minutes plotting tools, taking GPS readings and marking the site on the map. It would be worth a more detailed investigation at some point in the future.

After we had finished, I shouldered my pack and picked up the rifle. 'Ok guys, lets get going.'

'Down or up?' Gary enquired. I looked up the steep hill and then down towards the river. We were probably a hundred meters above the water and the bush looked incredibly thick as one approached the river.

'As much as I hate the idea, I'd say up.' There were a few moans and groans from group as we started up into the unknown forest above us. Half an hour later we had made little progress. We were forced to cross two more gulleys, both with handaxes and both forcing us both up and down the mountain. At one point my trip almost came to an abrupt and dramatic end. As I shoved my way through thick latex plants I suddenly found my foot dangling in the air. A sixty meter fall to the river faced me. I had nearly walked off the edge of a cliff. Scrambling backwards I crashed into Pedro, who, while looking down, nearly pushed me back off the cliff.

It took us another half an hour to work our way around a long ledge that ran parallel with the river, maybe a hundred and fifty meters below the peak. Parrots scattered from the trees above us as we moved through the dense bush, giving startled alarm calls as they raced into the sky.

'Do you smell the leopard?' It was Gary, who had moved into place behind me. I had, but hadn't placed the odour. The sweet but musky smell of the leopard's urine permeated the area we were standing in.

I pointed to the ground 'We're on his trail.' Large fresh pug marks were obvious in a few patches of soft earth. I had been unconsciously following a game trail along the ridge, a game trail obviously used by the leopard to patrol his territory.

'He's a big one.' I placed my hand over a track. I could barely cover the print with my open palm.

'And its fresh.' Gary noted. We pointed the tracks out to the others and started forward again. There was little we could do except to be extra vigilant as we moved forward through this thick bush. Fortunately, within fifty meters we emerged out onto a high gentle slope fifty meters above the floodplain. Large Jackleberry trees dotted the base of the mountain. We stopped there, under these giants and dropped our packs. Elephant and buffalo sign were everywhere. Fifty meters to our left the Luvuvhu was a slow and sluggish 150 meter wide expanse. Ahead of us, the floodplain opened up for about half a kilometer until it met gently rising hills to the North. This was it, the end of Lanner Gorge.

'Congratulations gentlemen. The first people to walk the whole length of the Gorge.' We solemnly shook hands all around.

'Let's find a campsite.'

Fifteen minutes later a suitable site was found just on the edge of the Luvuvhu. A small outcropping of dolorite boulders had made a rapids in the river. At this same point a large tree had been washed up onto a sandbar, lodging itself against some of the boulders. The two meter high sandbank of the Luvuvhu formed a third side. A safe triangle was formed making an ideal campsite that was protected on all sides from approaching animals. An important consideration given all of the elephant and buffalo sign in the area.

Three quarters of an hour later the camp was set up, firewood had been gathered and I had taken the liberty of bathing for the first time in two days in a shallow fast moving pool of water that was formed by a group of boulders at the edge of the rapids.

Gary walked up behind me 'What would you say if I bought you a beer to celebrate my marriage?'

'Sounds great!' I said, 'we can celebrate getting through the Gorge and have a mini-bachelor party! I presume we would have to hike up to Outpost?'

'Its not far.' He gestured upriver. 'Maybe a kilometer or two.' I looked at the sun. we had three or four hours of daylight left.

In two and a half hours we were back, carrying a couple of six packs in our packs. The others greeted us enthusiastically. Half an hour later the beers were suitably chilled in the cold water of the Luvuvhu and we toasted our expedition and Gary's impending betrothal. As we sipped our cold beers, the pair of black eagles joined us overhead, sweeping in from downriver and landing on a cliff on top of the mountain we had traversed earlier that day. Looking through binoculars we could see that they had a nest and were busy feeding a fluffy white chick.

That night we sat around the fire enjoying the darkness. Just after nine, a hyaena whooped in the distance, reminding us of where we were.

As the moon rose, I reminded the group that we had a big hike ahead of us tomorrow. I spread the map out and pointed at a route in the yellow firelight. My plan was to cross out of the floodplain to the North. I anticipated finding an elephant trail up through the hills that would make the climb easier. After reaching the top, we would hike for about five kilometers to a spring site that Gary and I knew of. At that point we would refill our water supply and then proceed another ten kilometers or so to Lookout Point above the Gorge. It was there that I intended to camp for the night It would be an excellent spot because we could, from there, look down into the Gorge where we had passed a few days earlier. The next morning we would get and early start and walk the final fourteen or so kilometers into base camp.

Steve tapped the spring site I had indicated 'What if there's no water in the spring?' It was a good question. We hadn't been to the site in a couple of weeks.

'My alternative plan is to head for this permanent spring here. If that fails, we either make our way all the way to Scout camp in one trek, or we abandon the walk back and make the ten kilometer hike back to Outpost.' Everyone nodded their understanding of the plan.

'I'm in for an early night. I'd suggest the same for everyone.'

The night was cold and quite. It was our first campsite that all of the nights sounds weren't drowned out by the noise of the river. Sometime around two or three in the morning I heard the calls of the hyaena again, closer than before.

'Whoop, whoop, whoop.' The call rang out in the night.

'Whoop, whoop, whoop.'

I rolled over, pulling the sleeping bag tighter around me.

9

Out of Eden

'Everyone drink as much water as you can, then fill your canteens in the river and purify them.' I took a long swig out of mine before walking to the rapids and refilling it with the cold water. Taking the purifying drops out of my vest pocket I squeezed three drops in before closing the cap and shaking the contents to thoroughly mix the water with the purifier. We would need this water to last.

As we started North, as I had hoped we quickly found an elephant trail going in the right direction. Sign of elephants were everywhere. In the dust of the trail were also the big pugmarks of the large male leopard, almost certainly the same one from yesterday. His prints were going back towards our campsite and had been made this morning.

'I guess he was just visiting.' Gary said as we walked.

The elephant trail did indeed take us in the right direction. It meandered towards a valley between two hills then began to wander its way up towards the peaks some two hundred meters

above us. Twenty minutes later, slightly out of breath, we had reached the top and for the first time in four days found ourselves on truly level ground. The conditions were completely different than those below, down near the river. Here on the plateau the vegetation was dry. Mopane and acacia trees were scattered around forming an open bushland. Every few hundred meters we would encounter a towering baobab, their thick trunks and leafless branches making them look like some bizarre tree that had been ripped from the ground and stuck back into the dirt, roots in the air. We would periodically stop to rest under these giants, some of which might be thousands of years old.

As the morning moved on, we made good progress. The elephant trails were like ancient highways. Thousands of elephants had carved meter wide tracks into the soil. Constant passage of these giants compressed the soil and soon elephant highways were formed. Smaller arteries would feed off of these larger trails. These smaller ones were feeding trails, but even these would always meet back up with the main highway.

Soon we were seeing sign of other game. Hundreds of tracks of buffalo and dozens of other animals. Probably three kilometers from the river, there were the first lion prints. *Panthera leo*. A solitary cat walking in the same direction as us, it was clearly following the buffalo herds. Hunting these great beasts. We all kept an extra vigilant eye on the surrounding bush as we walked. None of us wanted to run into one of these predators without plenty of warning. Lions are exceptional animals and anyone who has spent any time in the bush has a great deal of respect for these smart cats. Their very intelligence makes them unpredictable. The advantage that we have is that lions have been conditioned by millions of years of evolution to be as wary of us as we are of them.

Just over 3 million years ago, the first big fossil pantherines appear in Africa. The fossils of these cats are however, extremely fragmentary and are only found at a single site at this early an age - Laetoli in Tanzania. The same site where the famous fossil footprint trail of three early hominids walking across a volcanic ash field was found. We however have no way of knowing if these are really lions or a similar big cat like a tiger. It is in fact almost impossible to tell the difference between these two largest of the living felines from just a few fragmentary bones as lions and tigers are so closely related. I've seen the specimens and I suspect that these fragmentary fossils aren't lions but probably

another species of extinct big cat. The reason I suspect this is I feel that the evidence points to an invasion of lions from Asia or Europe around 2.5 million years ago.

Genetic clocking tells us that lions and tigers diverge from a common ancestor around 2.5 million years ago. A point of origin that coincides nicely with the presence of abundant lions in the fossil record of Africa. It appears to me that it is most likely that lions actually emigrate at this time into Africa from Asia, where large, tiger-like cats had existed for some time. Whether they developed their unusual pride-like cooperative behaviour here in Africa and then transported this behaviour back into Asia and Europe, or whether they brought it into Africa in the initial migration we may never know. What we do know is that lion behaviour, and the species itself, is one of the most successful ever. Lions ranged across the old world and Europe. There are still wild populations in India and the last wild lion was only killed in Europe just over a thousand years ago. But there are quite a lot of lions left in Africa. This is despite two hundred years of intense hunting pressure and loss of habitat.

By ten in the morning I began to realize that we were probably going to have to fall back on one of the alternative plans of action. As we reached the bottom of the drainage line of the spring we were heading for, there was sign everywhere of elephants digging for water. Huge holes dug down a meter or more dotted the drainage line. Elephants had used their large front feet and tusks to gouge down into the earth in search of water. Unfortunately for us, the base of these holes was dry, and this probably indicated that the spring above had also dried since Gary and I were last here only a few weeks before.

At the top of the spring mound, my fears were confirmed. The spring was dry. We sat under a huge baobab and discussed our situation.

'How much water do we have?'

Everyone brought out their canteens. All in all we had seven liters of water. Unfolding the map, I gathered the group around me.

'Ok guys, here are the options.' I put my finger on the other spring site. 'We can travel cross country to this spring. We're pretty sure that there's water there but it might be the same as this one.'

It was a walk of about ten kilometers, but ten kilometers through the bush. I moved my finger back to a point near this mornings campsite.

'We could also go back to *Outpost*.' I indicated the site on the map some seven or eight kilometers from where we were. 'or we could head for Scout Camp along this track here.' I moved my finger on a meandering line through the bush and along the top of the Gorge. 'Even in a direct line its about fourteen kilometers.' I estimated. 'But there is absolutely no water until we get here,' I indicated on the map 'the same place we started the expedition.'

Everyone sat back, examining the options. I looked up at the sun. The temperature had risen dramatically. It was probably approaching 26 degrees and might break 30 by midday. Just over a liter of water each wasn't a great amount for a fourteen kilometer hike with packs in this temperature. If someone had an injury or suffered heatstroke we could be in real trouble. The smart option would probably be to turn around and head for *Outpost* but I had a strong desire to finish this expedition on foot, not being driven to camp in a Landrover provided by a luxury lodge. Nevertheless, I couldn't let my personal ego overrule the groups decision at this point. We had, after all, accomplished our primary goal. Walking the Gorge.

'I say we go for Scout Camp. I'm not going to be driven into camp after all of this' It was Steve.

'I agree.' Gary added. All the others nodded their head in consent.

I was quietly pleased 'Then here is what we need to do.' I pulled my canteen out of my pack and put it on the ground in front of me. 'I want everyone to share one liter of water.' I picked up my canteen and passed it to Godfrey. 'Everyone drink their share and then we go on water rations. We might need as much as possible later.' I outlined my plan that we would walk at a four to five kilometer per hour pace, stopping briefly every thirty minutes for a water break. The terrain ahead I knew fairly well, having driven the track several times. It was rolling hills and fortunately, the only steep part was at the end, as we walked off the top of the mountain down to the Luvuvhu, and this was all downhill. If we kept to this schedule, four to five hours from now we would be safely at Scout Camp.

It was a surreal experience walking back. Our packs were still heavy with equipment. The early afternoon air was still. No bird or animal sounds. The only thing I could here was the

crunching sounds our boots made on the pebbly ground. Every now and then we would surprise an animal that had bedded down near the track in the shade of a tree, hiding from the heat. The crashing rush of the kudu or impala would refocus me on watching the surrounding bush for dangerous animals. We walked in a closely kept line. One behind the other. There was no talking, each man concentrating on the next step.

By three I was exhausted, but we were at the top of the mountain, it was all downhill from here. As we walked, the pack was biting into my shoulder. I could also feel a blister forming on the bottom of my foot. During a break I looked closely at the others. Gary had a pronounced limp from a toe injury but felt he could make it. I was a more worried about Pedro. He was beginning to look a bit pale and I was considering the possibility that he was on the verge of heatstroke. I insisted he take additional water beyond his share and we took an extra long break to recover before setting off again. I reminded everyone that once we reached the valley below, we would be walking through thick bush again and we should all be extra vigilant for buffalo, lion and particularly elephants.

An hour later we found ourselves on the floodplain, resting in the shade of a huge Nyala tree. We were within two kilometers of Scout Camp and everyone was eager to finish. I looked at my team. Exhausted, dirty but with their spirits still high. Using my rifle to pull myself up, I lifted my pack for the last time, feeling its weight as I shifted it onto my shoulders.

'Let's finish this.'

Epilogue

The next night I found myself sitting at Base Camp staring at the Luvuvhu river. The camp was quite, the students and most of my colleagues had gone to bed. I heard the soft sounds of the game guards talking around the fire behind me. The eerie jackal-like call of a fishing owl drifted from up the river. Godfrey approached out the darkness and crouched next to my chair.

'Hi G-man. How's it going.'

'Hey Prof., I just wanted to thank you. You've given me something special on this trip.'

'What's that?' I asked turning to look at the young man in the dim starlight.

'You've given me back my history. My Makuleke heritage.' With that said, he stood and walked back towards the fire.

I stared out at the dark waters of the Luvuvhu. Godfrey had regained some of his heritage but so had I. the journey up through the Luvuvhu had reminded me that these African wildernesses, these special rare and rapidly disappearing places, held the secrets of all of our history. Human history. The place where we had originated - our evolutionary Eden. These last remaining bits of Eden were our only chance to contact the Africa that had given rise to all of us – primeval Africa – the birthplace of humankind.