Ann. Zool. Fennici 28:131–137
Helsinki 19 February 1992

ISSN 0003-455X

Let us learn to dream... other things human paleontologists do

Becky A. Sigmon

Sigmon, B. A., Department of Anthropology, University of Toronto, Toronto, M5S 1A1 Ontario, Canada

Received 9 February 1990

1. Introduction

"He was becoming something the world had never seen before — a dream animal — living at least partially within a secret universe of his own creation and sharing that secret universe in his head with other, similar heads. Symbolic communication had begun. Man had escaped out of the eternal present of the animal world into a knowledge of past and future. The unseen gods, the powers behind the world of phenomenal appearance, began to stalk through his dreams." (Eiseley 1957:120)

Concerning this remarkably unique human trait, the chemist von Kekulé remarked "Let us learn to dream, gentlemen." (Koestler 1964:118) The occasion referred to his restive sleep during which he dreamed of a serpent turning and twisting around, taking hold of its own tail, from which he extended the analogy to interpret certain organic compounds which he concluded were closed rings of molecules. At that time in 1865, and even today, this discovery has been one of the more important finds in chemistry.

Koestler (1964) speaks of the importance in "acts of creation" of bisociative thinking where hidden analogies are discovered by the prepared mind. Two previously unrelated topics suddenly come together in the depths of one's uncluttered mind during a mind resting state, as in sleep or during some occasion when the conscious mind is doing something entirely different — or nothing. And the eureka effect occurs. Bronowski (1956), and of course many others, have noted that the creative mind works through the discovery of unity in hidden likenesses.

This uniquely evolved trait in humans of being able to find connections within the inner "chatter" of the mind and to express them, must have developed along with a release from the ever pervading presence in the mind of thoughts of the basic needs for survival. The development of the group concept and of the awareness of belonging to a group is not unique to humans. But the development of group support along with recognition by the members of that group that different individuals have different talents to contribute, seems to be a key factor in the evolution of human societies. Thus the division of tasks according to ability must have begun in early human groups. It is a trait that is still found in hunter-gatherer societies like the Bushmen. This recognition would have resulted in a release for certain individuals from everyday tasks essential for survival, to providing time for the development by that individual of his innate talents. Levels and types of intelligence and abilities must always have varied, but with group support and acceptance of differences, some individuals now had the chance to develop the creative elements in their dreams.

We see this first in Neanderthalers, although it may have originated in even earlier hominines. Studies of the Shanidar group (Trinkhaus 1983) suggest the likelihood that there was group support for those who were physically incapable of providing for themselves — perhaps they contributed to the group in other ways. The fact that Neanderthal people buried their dead and placed tools or mementoes with the body, indicated they had developed a death "awareness" as well as possibly an idea of the presence of some dimension beyond death. The artistic renderings characteristic of the later Cro-Magnon peoples who painted and drew on cave walls suggests that some in the group were seeing and portraying things in a way that others couldn't, and that their skills were noted and supported by the group.

We see similarly creative associations being made by people today in a variety of areas of human endeavour. We can find it in scientific work as well as within those fields that go beyond the rules of science. In the former case discoveries through bisociative reflection is reproducible, a basic criterion of the scientific method. Other examples are non-reproducible and by definition, are "non-scientific" although no less valid — certain subjects cannot be fitted under the scientific rubric but it makes them no less a human reality. I have found the occurrence of this human creative element in studies within prehistory and human evolution, and have selected 3 examples to discuss in this paper. These deal with the more non-scientific contributions of 3 paleontologists who have delved deeply into their subjects, who have made connections between what sometimes seem like quite diverse areas, and who presented the story of how these different topics are related.

Paleontologists spend a good part of their lives thinking about the past. Some go beyond the study of the fossilized bones, and beyond the functional, analytical and phylogenetic interpretations of the animals they are studying, to reconstruct living scenarios. In the sense of Frye (1964) they use their "educated imagination" to recreate the animal and the environmental circumstances that it adapted to and survived in. The ability to reconstruct this world through the feeling of personal projection and sense of wonder that comes from observing and studying it, and making it come alive again through imaginative and educated description, narratives, approaches and philosophizing, is a major contribution that certain scientists can give to the reader.

It is why Kurtén could write on how to freeze a mammoth, or compose paleofiction; it is how Robinson's curiosity about the workings of the mind led him to experiment with a clairvoyant who professed to "see" life scenes of early australopithecines; and it is the basis on which the Jesuit priest Teilhard de Chardin built a spiritual aspect into the study of human evolution.

There is a line of continuity from the past to the present — and back to the past again — among these individuals. They all possess the same drive that was one factor that led hominids to become human. This inner drive, this inner conversation with oneself sometimes referred to as "mind chatter" is one source of the curiosity, wonder and imagination which allows an individual to make associations between things, to ask why and to seek to find answers. The results sometimes occur as narratives that are built up from the bits and pieces of information available. Kurtén frequently used this approach as he imaginatively reconstructed past events from the fragments of fossils.

Landau (1984) spoke of the use of the narrative in the study of human evolution. Human evolutionary studies become more comprehensible to us when we can actually visualize and relate to the events of the past, and read these events as in a living story. As Kurtén said "... paleontology is not a science about those long dead; it is a science about those who *lived* long ago." And further, "Isn't it more fun to see a dinosaur as something that once was alive rather than as the monstrous heap of bones which it happens to be at present?" (Kurtén 1986a) One may ask whether or not having fun is an important aspect of science, and many would shudder at the thought. But others would agree that one of the bases of investigation is curiosity — and if a subject gives delight to the student, he will pursue it with greater vigor. The presence of an element of "fun" gives one such delight, and it would seem that scientific investigations reap the benefits.

The power of the narrative is that it allows the average person to experience an appreciation of a topic they know little or nothing about.

Although these people themselves could not create a moving image from bits and pieces of information like broken fossils, they can visualize scenes and events when the information is acquired through a story. Another kind of person can build up an image or a story of an event through having certain fragmentary pieces of information. These are the ones who can look at a piece of amber with black specks inside it, and they can imagine the time 20 million years ago when it was merely a drop of resin flowing down the bark of a tree where by chance there sat a fly that became trapped in its sticky substance. This particular kind of talent occurs in certain geologists, paleontologists and archaeologists, and it is with the contributions of these people who explore beyond scientific boundaries that this paper is concerned.

2. Kurtén's World

As the prehistoric stew was brewing, those preparing for the feast were experiencing anxiety tempered with elation. The main component of this meal was to be bison, and the recipe had been uniquely designed for the freshly frozen meat that had aged for 36 000 years.

In Alaska, tens of thousands of years ago, there lived a species of bison, *Bison priscus*, that was hunted by early native peoples. As is the case with many other large mammals that humans prey upon, this bison became extinct. In 1979, the Anthropologist Guthrie discovered a frozen body of this great mammal. He had the beast placed in a freezer in an attempt to maintain its preserved state while it could be studied. Was the flesh still edible? In the spring of 1984, Kurtén was invited along with some other colleagues to partake in a pre-historic stew made from steaks of this Ice-Age mammal. The taste was "agreeable", and the feasters "... had the momentary dizzying feeling that, for a moment, a bridge was spanning the ages ..." and that they were returning organic molecules "... to the biosphere after a thousand generations." (Kurtén 1986a)

In biology, Kurtén says further, the "... facts in this field are so wonderful that most comparable products of imagination tend to fall flat." Even so, many people would not be able to relate to such facts as well as he. Kurtén, in his own unique style was able to put together and translate prehistoric facts with an imaginative deftness that could leave the reader with a sustained hunger to know more. In many of his works he also used a personal and anecdoctal approach. The readers could feel very much in touch with their author. For example, in his book *Before the Indians* (1988), he was able to paint America as it was previous to and during the time the earliest humans inhabited it, and the story was, as he says, "... without moral or intent." It is a narrative in which the reader becomes immersed, and wants to read through to the end of the book. One actually hears the echoes of the icy winds that are blowing off the glacial plains, and the trumpeting of the mastodon as they push away the snow with their massive tusks in order to get at the underlying vegetation. The reader follows as the first Americans hunt these great beasts, and the narrative holds one spell-bound. Only silently, and in another part of the mind, one vaguely realizes that one is also being educated about life in America's past by a master storyteller.

This person named Björn which means "bear" in Swedish, was destined to live up to his name by telling the world about the evolutionary story of the cave bear, *Ursus spelaeus* (Kurtén 1976). He described the Pleistocene world that was home to this huge beast, and built up the story of the bears' own life style placed in a perspective as if it were living today, but on some other, unreachable part of earth. His mixture of fact and narrative are blended together in that same delightful fashion that is reminiscent of the Lascaux cave art where one sees a story of earth's great Pleistocene beasts from the paintings which combine their form based on reality, with an imaginative style based on the interpretation of the artist.

One of his most delightful books entitled *How to Deep-Freeze a Mammoth* (1986a) combines a collection of essays of variable bisociative thoughts. These essays ranged from the suggestion that the spiritual concept of transubstantiation predates the Christians by more than 40 000 years since it was present in Neanderthals with their ritual cannibalism, to the finding and feasting on a 36 000 year old frozen bison spoken of earlier in this paper, to giving a recipe for freezing a mammoth.

In his two books of "paleofiction" (1986b and 1988), Kurtén explored his flow of thought of possible scenarios for events in the life of Neanderthal and Cro-Magnon times. He described these works as not being scientifically sound enough to present as science, but the novel provided an outlet for a mind overflowing with ideas. It became another approach to bringing alive a past which he conceived of as our "living" past — and a possible reason for the extinction of Neanderthalers.

Kurtén had the talent of transforming information into knowledge, and presenting it in narrative style. With a mind prepared and ready to make associations wherever he could, he drew on information wherever it appeared to be relevant to his work, and he tied it into his understanding of the past and into his compositions on prehistory.

This feeling of continuity with the past is shared by many in similar but different situations. Geologists can visualize the earth plates moving as they speed up, in their mind's eye, the process of continents drifting over the earth's surface. Archaeologists re-create an environment from the past, and they can imagine the herds of caribou migrating through valley corridors which in the present may simply have a superhighway running through it (Storck 1971). Prehistorians can see the Cro-Magnon artists as they stand in the backs of the caves, smearing paint on the walls and creating pictures of the animals that they have seen perhaps even just that very day. Human paleontologists feel the connection to the past when they discover a fossil which was once a part of the skeleton of a human who lived long ago, and they feel the sacredness of the moment which is the first time in possibly more than a million years that this person has been seen since its death — it is a dizzying moment.

3. Robinson takes different looks at australopithecine life

One such human paleontologist, John T. Robinson, has investigated the past life of australopithecines and it has taken him into a number of diverse pathways. From his careful study of the fossils themselves, he reconstructed the eating habits of these early hominids, concluding that there were 3 different types of hominids who occupied South Africa from about 1/2 to several million years ago. What an animal eats determines its everyday habits, its morphology and behavior and vice versa. The kind of environment that it inhabits can be reconstructed once its dietary pattern is known. Narrative permeates these works, although the style is much more impersonal than that of Kurtén's.

In certain respects, Robinson was the first individual to study hominid fossils from a zoologist's point of view. To him, they were not only our revered ancestors, but they were forms of animals that could be studied in the same way as other animal species could be studied, by using the same zoological rules. His zoological approach was an advantage that gave him insight that was often different from that of others who had studied hominid fossils before him or at the same time as he did — for most of the others were educated primarily as anatomists, medical doctors, or physical anthropologists. Robinson saw the fossils as did Kurtén — as the remains of animals that had been alive, and as such, had to have been adapted to their environment. He saw them as beings that had a life style, and through meticulous studies of the fossils, recreated what, he reasoned, would have been their mode of life some million or more years ago. He would, on one occasion, be able to explore this topic in a totally unique way.

Throughout his life, Robinson continually expressed an interest in exploring the multiple capabilities of the human mind (Sigmon in preparation). He was aware of its being a difficult topic to explore in the usual scientific way, since much that the mind seems able to do cannot be exactly reproduced, as the rules of science call for. On one occasion, he was able to explore the topic of clairvoyance, in respect to his own work on the australopithecines.

Through an acquaintance in the Theosophical Society, Robinson was to meet a New Zealander named Geoffrey Hodson, a well-known clairvoyant. In a paper written for the *South African Theosophical Research Group*, Robinson and Donnelly (1960) described their experiments with Hodson's clairvoyant abilities applied to the australopithecine fossils. This was a subject

in which clairvoyance had never been attempted. It seems relevant enough to the present topic to provide some of the detail of the experiment.

Hodson was not a scientist, nor had he ever heard of the australopithecines when he was approached for this experiment in the late 1950's. He knew nothing about human paleontology and had no preconceived notions about the nature of early hominids. At the time of the experiments he was about 70 years of age. Before he had gone into theosophy and clairvoyant lecturing and practice, he had worked in a bank. It was only after the experiments that he would read Robinson's interpretation of these early creatures.

The experimental sessions were begun with a "pilot" test in which certain fossil specimens were sent to him in New Zealand. In the presence of an accompanying scientist — a local doctor — he described on tape what his mental images were after actually touching the specimens. The results were sufficiently interesting that Robinson arranged to carry out further experiments with the clairvoyant. The second set of experiments were done in South Africa at the site of Sterkfontein from which many of the fossils had been excavated, that is, it was the location where the australopithecines has actually lived! The sessions were taped so that everything that was described when Hodson was given a fossil, was recorded. An example of the proceedings are as follows: Robinson would hand him a fossil; Hodson's eyes were closed and he was in a relaxed state, and lying down. If Hodson saw a hominid, he would describe its form in general such as the color of its hair, its general shape, etc. Robinson might ask him to describe the face or tell him what the hominid was doing or eating. Occasionally, Hodson would reply that the creature had its back to him and he couldn't see yet what Robinson asked for.

Most of the information that Hodson described could be checked on the fossils, for example, if the form had short or long canine teeth. This kind of information demonstrated that he had identified the right form of hominid. Other information that he offered could not be checked, such as his observations on behavior. One description that directly contradicted what Robinson had concluded from his study of the fossils is that in which Hodson kept seeing *Paranthropus* in trees, usually eating. At this point in Robinson's studies, he had concluded that this form was a habitual, bipedal ground dweller, as were the other australopithecines, similar to the locomotor behavior of *Homo*. Hodson continued to maintain that he was only describing what he was "seeing." At the time there was no way to confirm or deny this observation, only that it did not conform with Robinson's own conclusions from his study of the fossils themselves.

Interestingly, several years later, after 1962, when Robinson began studying the postcranial skeleton of the australopithecines in greater detail, (along with the accumulation of additional data from East Africa), he began to discover certain features about *Paranthropus* that suggested a different locomotor adaptation than he had initially thought. And surprisingly, he had to admit that this form indeed, appeared to be adapted to locomotion that must have included a great deal of tree climbing! (See Robinson 1972). I know of no other such study that has explored early hominid adaptation along these lines. One would certainly have to admit that this type of investigation does not fall within the normal boundaries of scientific research. It leaves one with a lingering question that one doesn't quite know how to ask.

4. Teilhard de Chardin

When I was in graduate school I read the works of the famous paleontologist and Jesuit priest, Teilhard de Chardin. His book *Phenomenon of Man* impressed me as interesting, but at that time in my life it is not something that I could really relate to. And indeed, I rationalized at that time that here was another author who was managing to find a way to fit his *beliefs* on religion to the *facts* of evolution. Two decades have passed since then, and it became time for me to reread one of the climactic works from the life of this individual. My purpose was to show how another paleontologist had tied together his knowledge in human paleontology with some aspects of its non-scientific dimensions. It came as a surprise to me that now I seemed to be reading with clearer vision (I had to admit that

the book itself was the same, so it must be myself who had changed). Although I had written notes in the margins from previous readings, I found myself scribbling even more responses during my most recent rereading. My changed perspective, I reasoned, must be due to the maturation of my own consciousness as well as a change in my conscious environment. In other words, it seems that I, and the society in which I live, had developed to the point of being able to appreciate and better comprehend the thoughts of this mind so elegantly honed with perceptive compassion of and understanding in the subject of human evolution.

It is not my intention here to provide a full, or even partial, account of Teilhard's thoughts on the evolution and future of humanity. What I shall attempt to do is to draw to the reader's attention the contributions, in a general sense, that this individual has made to the non-scientific dimensions of human evolution.

Although human paleontology, because of numerous new fossil finds as well as new technology to study them, has changed considerably since his time, as he died in 1955 after a long, fulfilling and productive life of 74 years, Teilhard's thoughts on the meaning of human evolution are as fresh as the day he must have conceived them.

Two of his terms are particularly relevant here, and it is from this juncture that I will attempt to fit in and explain some of his ''non-scientific'' contributions to his discipline. The words are *noogenesis* from which arises the *noosphere*, and the *Omega point.* Neither of these concepts can be "proved scientifically", yet his discussion of them reveals areas of evolution that one intuitively feels to have some validity. However, these are areas that do not fall under the standard scientific rubric.

"When for the first time in a living creature instinct perceived itself in its own mirror, the whole world took a pace forward." And "The being who is the object of his own reflection, in consequence of that very doubling back upon himself, becomes in a flash able to raise himself into a new sphere." (Teilhard de Chardin 1955:181, 165)

With the evolution of humanity, there emerged a new kind of knowing, Teilhard would say. Humans became deutero-knowers, that is, they know that they know. They have the capacity to be aware that they can know. Just as Bateson (1942) described the young human as a deutero-learner, in that he can learn to learn, humans and human evolution simultaneously emerged the capacity of self-reflection, conversations with the inner self, "mind chatter", or the ability to transcend the self to see it aside from itself. Hominisation itself is evolution personalized, or become conscious of itself. It is the first time any animal can think about its own *raison d'etre*, and do something about it, or choose to do nothing, knowing that it is so choosing. Others have expressed similar ideas as to what is unique about humans. Teilhard developed it in this way, and expressed the marvel of the evolution of an entirely new evolutionary system, or plateau, that is like a "new skin for the earth" as it goes beyond the biosphere, forming what he sees as the Noosphere.

Not only was there a genesis of an entirely new evolutionary system, but there is a *raison d'etre* for its existence, and that is the Omega Point. The collection of all the individual uniqueness and energy into a central point in the cosmos is a theme that required a book of several hundred pages for Teilhard to explain. It cannot be abbreviated into just several paragraphs. The main point to be made here is that this is the direction that his thoughts took, and it combined his paleontological knowledge with his own innate feelings as a human being. The first could be studied and analyzed, but the latter was his non-scientific contribution. It is the latter through which he is best known, remembered and beloved, even though the Church did not permit publication of these philosophical works until after his death.

5. Harnessing the mind chatter and keeping away the time tyrant

Imaginative and innovative thinking are human characteristics which have been with humanity since their beginning as self-reflective beings. Having and taking the time for focusing one's mind chatter is a primary component that is pervasive in the examples discussed in this paper. At the time of their imaginative approaches to

looking at human evolution, each individual had or found, and then took, the necessary time to develop whatever line of thought they were working on. For example, Eiseley (among numerous other scholars) thanks the granting agency that gave him the opportunity to take time from his regular duties in order to write the essays for his book *The Immense Journey,* from which I took a quotation to begin this paper. This is a modern example of the group support that comes with the recognition and appreciation of individual differences and abilities. Without the leisure of being able to focus just on one's ideas, and develop these thoughts as they flow out of the mind *at their own pace, and in their own rhythm,* there surely would be, and would have been, much less creative thinking in humanity.

6. Summing up

What these and numerous other creative individuals have in common is a capability like that of their forebears who created images on cave walls, carved them in rock, and looked beyond the present to other time dimensions. They wandered around, in their minds, through time and space, in ways not possible to other animals, nor indeed not possible to all members of their own species. Creatively combining their knowledge with their imagination, like their antecedents, they walked along footprints embedded in time on a path of unbroken continuity that runs through the human race.

References

Bronowski, J. 1956: Science and Human Values. — Harper & Row Public., New York. 94 pp.

Eiseley, L. 1957: The immense journey. — Vintage Books, New York. 210 pp.

Frye, N. 1964: The educated imagination. — Indiana University Press, Bloomington, Ind. 156 pp.

Koestler, A. 1964: The act of creation. — Hutchinson & Co., London. 751 pp.

Kurtén, B. 1976: The cave bear story: life and death of a vanished animal. — Columbia University Press, New York. 163 pp.

— 1980: Dance of the tiger: a novel of the ice age. — Pantheon Books, New York. 255 pp.

— 1986a: How to deep-freeze a mammoth. — Columbia University Press, New York. 121 pp.

— 1986b: Singletusk: a novel of the ice age. — Pantheon Books, New York. 211 pp.

— 1988: Before the Indians. — Columbia University Press, New York. 158 pp.

Landau, M. 1984: Human evolution as narrative. — American Scientist 72:262–268.

Robinson, J. T. 1972: Early hominid posture and locomotion. — Chicago University Press, Chicago. 361 pp.

Robinson, J. T. & Donnelly, M. E. 1960: An investigation of clairvoyance as applied to the study of a chapter in primate evolution. — South African Theosophical Research Group. (In 1977 Robinson added the following to his first report: "Footnote to the study of clairvoyance with Geoffrey Hodson, 1960").

Storck, P. 1971: The search for early man in Ontario. — Rotunda: Bulletin of the Royal Ontario Museum 4(4):18–27.

Teilhard de Chardin, P. 1959: The phenomenon of man. — Harper & Row, Publ., New York. 318 pp.

Trinkhaus, E. 1983: The Shanidar vertebrates. — Academic Press, New York. 502 pp.

Waddington, C. H. 1967: The ethical animal. — Univ. of Chicago Press, Chicago. 231 pp.