The Role of 'Primitive' People in Identifying and Approaching Human Problems

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Introduction

From the moment he became human, man has been driven by a desire to know. This urge has pushed him to innovate and to surmount formidable obstacles, and has fuelled his dazzling evolutionary development. From his earliest days, merely surviving has never been enough.

Our unique and versatile minds may have developed according to evolutionary pressures to survive, but barely were they formed, than they began to work in extraordinary ways, challenging and redefining the very forces of nature they came into contact with. Even while he lived in caves and hunted for a living, man asked questions that went far beyond the mundane: Where are we going? Where did we come from? What forces shaped our universe?

The story of our evolution includes our attempts to find answers to these questions, and many more. Our shared human history may shed some light on the advantages, origins and possible future development of what has become an unstoppable habit – man's determination to use the power of his mind to break through whatever restrictions face him.

Examination of the archaeological record, as well as of 'modern primitives' living in contemporary hunter-gatherer societies, shows at the very least that supposedly 'primitive' peoples have dealt with human problems in similar ways. Above all, the debt we owe to them for their pioneering role in identifying and approaching problems common to all of humanity should be recognised. We shall start by examining the origins of man's capacity to adapt and survive, which goes back to the birth of humanity.

The Origins of Mankind

Man's common ancestor with the apes, the so-called 'missing link' may have lived some 6 million years ago. As such, he was a newcomer. The dinosaurs, for instance, who roamed the earth for millions of years, died out some sixty-five million years ago.

An early type of hominid skull, found in East Africa, dates from

two to two and a half million years ago. This man has been named Homo Habilis, 'the handy man', after his ability to fashion simple tools from stone and probably from wood. Judging by a cast of his skull, he probably also had limited powers of speech. His canines were smaller than an ape's but his brain was still only about half the size of our own. For around a million years his Olduvai tools (named after the Olduvai gorge in Tanzania) – little more than chipped pebbles – represented the pinnacle of technological achievement on earth. There is no indication that they developed at all over that vast period of time.

This provides an interesting contrast to modern man, if we consider the amount of human development compressed into the mere ten thousand years from the birth of agriculture to the present day.

Following the pattern of human evolution, whereby development appears to come in stages, there is no trace of real progress until the appearance of a new species of hominid – Homo Erectus – some one and a half million years ago. Homo Erectus had a larger brain – it eventually grew to about 80 per cent of a modern human's. His height increased too, to about five foot, and he added tools such as handaxes and choppers to the repertoire of Homo Habilis. He apparently made use of fire, although he probably did not know how to create it.

Recently, in Germany, a find was unearthed which has forced archaeologists to re-assess their views on Homo Erectus. A set of 400,000 year old wooden spears, carved with flint from a spruce trunk and beautifully weighted for throwing, proves that Homo Erectus possessed the patience and skill required to fashion them, and shows that he could plan for the future and hunt co-operatively.[1] These achievements, however, represent the gamut of skills which Homo Erectus mastered – although he lived successfully for around a million years, weathering ice ages and migrating widely.

The emergence of what is known as Archaic Homo Sapiens brought little change at first in tool manufacture. But his brain was now as large as modern man's – and apparently identically structured. There has been a considerable amount written on the reasons for the development of man's brain. Theories differ, but there does appear to be a loose correlation between the physical development of hands, allowing tools to be made, and the greater brain capacity which tool-making required.

Somewhere into the equation must come speech; which, it is supposed, had developed from a mere extension of animal-like grunts and gestures into an incipient language. The role of language in refining thought has been well-documented. It has also been suggested that, as children began to need longer to mature, man's life span increased and there was a restructuring of family groups, implying more varied and complicated social relationships.

In his book, 'The Evolution of Man and Society', Cyril Darlington sets out some of the evolutionary pressures for mental development:

> 'Clearly one invention led to another. Each development in the association of hand and eye by the brain opened a new field of activity which made further associations of hand and eye more useful . . . Thus a process of directed evolution of the brain was set in motion.'

But that process was still painfully slow.

Neanderthal man appeared on the scene up to two hundred thousand years ago – well before the arrival of Cro-Magnon man, our own progenitor. Neanderthal man disappeared a mere 30,000 years ago. So – amazingly – the span of Neanderthal's existence – around a hundred and seventy thousand years – may have been nearly double that of our own to date. Yet this type of man, with a general intelligence which appears to be at least as high as our own (if anything, his brain was heavier) reached a plateau of culture about 100,000 years ago, where he remained.

In many ways, his story is the most puzzling evolutionary mystery we have yet seen. He was expert at making stone tools by the Levallois method – which required chipping at a piece of stone on a block with a degree of hand to eye co-ordination, and an ability to conceive of and plan the finished tool. He learned to bind these to wooden shafts, to make short spears for throwing. He lived in social groups, and dominated Europe and South West Asia for thirty thousand years. He buried his dead – there are traces of what appears to be a skull cult which stretched across Europe.

There seems no doubt that Neanderthal man made the advance into altruism. He protected at least some older or weaker members of his society. The skeleton of a forty year old man (extreme old age for early man) has been discovered which dates back 60,000 years showing signs that he had been severely incapacitated from birth,

and must have been kept alive by his group.

But, though ice ages came and went, Neanderthal man failed to develop beyond this point for a hundred and seventy thousand years. Again, we see a complete lack of the irresistible urge towards development that has characterised later Homo Sapiens history. Towards the end of his existence, there are signs that Neanderthal man made rather pathetic attempts to copy the newer Cro-Magnon peoples in some of his practices: using red ochre as a kind of ritual decoration for example.

In his final years, it became obvious that he needed to innovate to survive; for example, to develop a wider variety of tools. However, despite evolutionary pressures, he did not seem able to make the necessary development. Eventually he died out, apparently from force of competition.

His paucity in adjustment has led some observers to conclude that he lacked some basic function of mind; possibly the ability to integrate different spheres of specialised intelligence. For example, if they could not combine the areas of social and technical intelligence, workers making tools would be less likely to gather together in groups performing a simultaneous social function, where information about tool-making might be exchanged.

Some analysis of the positions of tools strewn around Neanderthal camps has suggested that this is so. In his book 'The Prehistory of the Mind' Steven Mithen says:

> ' . . . the monotony of industrial traditions, the absence of tools made of bones and ivory, the absence of art . . . it seems to me that the only way to explain the archaeological records of early humans is by invoking a fundamentally different type of mind from that which modern humans possessed.'

What seems certain is that, after a period of parallel Neanderthal and Cro-Magnon evolution, Cro-Magnon man emerged with an evolutionary edge connected with the way in which he had learned to use his brain. To try to guess at what this was, we must look at the story of his emergence.

The development of the Modern Mind

Cro-Magnon man is the latest arrival to the hominid scene. He appeared just a hundred thousand years ago, at a time when Neanderthal Mousterian culture was at a peak. For around sixty

thousand years, Neanderthal man seemed, if anything, to be more successful than Cro-Magnon. He was stronger physically (although stocky and not so tall). His children developed more rapidly. He was a skilful hunter. Cro-Magnon man lived quietly and appeared to develop very little for sixty thousand years. He made stone tools virtually indistinguishable from Neanderthal's.

Then, around forty thousand years ago, he made an extraordinary cultural leap.

The tangible manifestation of the revolution is seen in art. It was the first time art in any form had been seen. When it did arrive, it appears to have done so virtually overnight, without any visible evolution of artistic ability. By 30,000 years ago it had spread across the world as a universal attribute of the human mind. It took many different forms: carved ivory figures (for suddenly man had discovered how to work wth ivory and bone), cave art, 'tallying sticks' for keeping records of hunts. There were naturalistic representations of every conceivable type of animal.

There are signs that this advance was connected with the way he was thinking: there was an explosion of tool culture at the same time. It must have been the equivalent of the Renaissance and the Industrial Revolution all happening at once. Furthermore, at the same time as he made the leap to depicting creatures from the world around him, man also made a further jump – he created fantastic figures of creatures that nobody had ever seen – juxtapositions, such as a boar's head on a man's body. This hinted at a well-developed mythology to accompany the images.

So, as well as learning to think representationally and to depict creatures he saw around him, man had also begun to express himself symbolically, breaking out of the confines of the natural world. This date, rather than the time when early man reached his full brain capacity in terms of size and shape, is the one at which one can say that he became entirely human.

It can scarcely be unconnected that this was also the time when his abilities to solve the problems of survival took a quantum leap. All sorts of new solutions and methods began open to him. He could, for instance, imagine himself in the place of his prey, and thus anticipate their movements. He could plan and design much more intricate tools, tailored to a wide variety of applications, rather than relying on just one or two designs to fit all. He could carry out complicated, several-stage hunting strategies.

Some observers have suggested that the development of rudimentary speech into language at this stage triggered the revolution in thought which set his imagination free. Whatever its cause, the kind of thought which lent itself to his flair for solving concrete problems also opened the door to perceiving new layers of abstract questions.

His juxtaposition of concepts and images gives us a clue about the way his mind was working – making connections, for example, between man and beast, between the hunter and hunted.

It seems evident that it was now, at the very start of human history, that he conceived of the idea that there are forces beyond the physical world which may influence and be influenced by man – which has remained with us in one form or other until today. His earliest use of art demonstrates it to have been associated with this new way of thinking. Not as a mere ornament, but as an attempted solution to a problem that he was beginning to see in magical terms. If there were unseen forces governing important matters, like the progress of the hunt, how could he come to dominate them?

The cave of Trois Frères in the Pyrenees is a prime example of those attempts. Like most examples of cave art, this is accessible only with the greatest difficulty, putting paid to the notion that the cave drawings of early man were merely for domestic decoration. Inside, however, there is a riveting sight. After passing an alcove with the engraving of a lion, the visitor comes to a chamber whose walls are covered with beautifully-executed images of every type of Palaeolithic animal. Leading out of the chamber is a low natural tunnel, also covered with images. This tunnel slopes upwards, then doubles back and forms a kind of window overlooking the chamber. In 'Our Forerunners', M.C. Burkitt describes the scene:

> 'To the right of a person standing in this window, and at the same level, and so dominating the alcove below, is the figure of a man masked as a stag. The feet are human, but the head has obviously been covered by a stag's mask with antlers . . . Not only is the figure itself important, but its position, alongside the 'window' or 'pulpit' dominating the frieze of engravings and any spectators below, is still more important.'

The suggestion is inescapably that some form of ritual activity was taking place. The figure has been termed the 'sorcerer' of Trois Frères. There has been academic debate about whether he should

more correctly be taken to depict the 'genius' or 'spirit' of the hunt. What does seems certain is that man had made the leap beyond the natural world he could see around him. He had come to the conclusion that there were some forms of invisible forces governing the natural order. And he had made the further deduction that actions of his own might in some way come to influence them for his benefit.

Learning from the Environment: problem-solving capacity of early and 'primitive' man

So, what kind of man had thought out this revolutionary concept? There is every indication to suggest that the roots of logical, as well as imaginitive thinking, were laid at this early time.

The bitter conditions under which he was able to function and survive may point to the causes of this specialisation. His development had been taking place against a backdrop of the most hostile weather conditions imaginable. The last ice age reached its peak just 24 thousand years ago. Besides forcing man to roam widely in search of food, it gave him the means to do so; as the ice caps froze the seas dropped by hundreds of metres, opening up huge land bridges between continents. The Mongolian peoples, for example, crossed the Bering Straits and spread over the United States. An Australoid people pushed into New Guinea and Australia and the Eskimos spread out towards Alaska.

It was now, scattered across the world, amidst widely-changing weather and geographical conditions, that primitive man came into his own as an expert problem-solver. The legacy of his dynamic approach and inventiveness is with us today. Early man has left firm indications that he was capable of closely observing and drawing conclusions from the natural environment around him. He was, furthermore, perfectly able to apply these conclusions to his own ends. One such piece of evidence is a bone pressure plate, dated at around thirty thousand years ago, which today's scientists consider a symbolic representation of the sequential phases of the moon over two and a quarter months. It seems probable that early hunter-gatherers made careful records of their observations of the night skies, in order to put into practice the changes in the behaviour of their prey over the seasons.

Of such importance is this record, that in 'The Roots of Civilization', A. Marshack concludes:

> ‘The problem-solving processes involved in structuring and sequencing the notation were of the same order as, and incipient to, those that would be found, in the later development of writing and arithmeticized record-keeping.’

In the present day, the problem-solving capacity of many so-called primitive people is a matter of continual surprise to field-workers studying them. The Aleut of Alaska, for example, until their culture was degraded by contact with the ‘advanced’ world, used to possess a comprehensive body of medical knowledge, demonstrating their extraordinary powers of observing the environment around them, and applying its lessons. They conducted dissections of people who had died, and thus built up a store-house of anatomical knowledge, which they used in treating the sick. Surgery was carried out, often taking place in the warm sweat bath, and using sutures made of sinew. Much of their medical practice consisted of observations of animal behaviour. Noting that sick animals ate very little, they often prescribed a period of rest and fasting.

One observer[2] describes how a village headman, engaged in training boys by making them run up and down a hill while carrying stones, would monitor their heartbeat to avoid over-exertion. They proved their ability to gather empirical data again and again – as in the case of the two villages who conducted a boat race to judge whether the team accustomed to boiled food or that which ate steamed food was the fitter. Another hunter-gatherer people, the Tungus, were documented by Russian observers[3] as performing an experiment striking for its modernity. Hearing a report of a type of bird that reportedly dived into one hole in the ice and emerged from another, some of the hunters sought one out. When they caught it, they tied a string to it, in order to observe how it dived and what it ate. Finally, they killed and dissected it. This practice of capturing animals for observation was widespread, and a valuable way of continually updating hunting methods.

This modernity of thought is by no means unusual. In the West, an apparatus known as a ‘fire-piston’ was ‘invented’ in 1802 and patented in England in 1807, where it did a brisk trade in tobaccanist shops. Imagine then the surprise of no less a personage than the renowned anthropologist Sir Edward Tylor upon finding the same device in widespread use in isolated regions of Burma, Malaysia, Siam and the Philippines. In ‘The Early History of Mankind’, he wrote:

> ‘There is a well-known scientific toy made to show that heat is generated by compression of air. It consists of a brass tube closed at one end into which a packed piston is sharply forced down, thus igniting a piece of tinder within the tube. It is curious to find an appartatus on this principle (made in ivory, hard wood etc) used as a practical means of making fire in Burmah, and even among the Malays.’

So difficult did Western observers find it to accept that they might have pipped to the post by many millennia by those whom they considered mere primitives, that there was careful consideration of whether the objects could have been introduced from outside, before they were forced to conclude:

> ‘There is no record of introduction by Europeans . . .’

and that:

> ‘there is no inherent impossibility in . . . a double origin, cases of independent invention of similar appliances in widely separated regions having frequently arisen.’[4]

After a survey of such techniques, one observer[5] concludes that what he calls the ‘consistent underestimation’ of the knowledge of such peoples is, very often, due to the lack of information of the anthropologists collecting data on them. With only a rough knowledge of the local language, and next to no information about, say, aspects of technology or advanced anatomy, they are poorly-equipped to understand, let alone process, information they are given. The secrecy with which many peoples protect what are, in effect, technical guilds, merely confuses further the hapless anthropologist.

In fact, an examination of the most-recently surviving hunter-gatherer peoples shows their capacity for continually adapting, and finding practical solutions to problems presented by a wide range of climatic and other conditions. All such peoples have developed sophisticated hunting techniques adapted to their environment. One example, used by Congo cannibals, and witnessed by the nineteenth century traveller Herbert Ward, provides a illustrative contrast to the inflexible approach of Neanderthal man.

The hippopotamus is hunted, we are told, with a spear attached to a cord, which is in turn tied to a block of light wood, which acts

as a float. The hippo plunges into water but, thanks to this device, it may be followed – at a respectful distance – by the hunters, until it comes to the surface, dead.

This superb piece of practical thinking takes place among people whom an appalled Ward discovers to be enthusiastic cannibals:

> 'All was flesh that came to their net; and if a slave, captured in war or sold into bondage by a neighbouring people, became "uppish" and discontented with his walk in life, the remedy was simple. They no longer troubled him to continue treading a path which proved a weariness to the flesh. The pot became his destination and he soon ceased to afford even a topic for conversation.'

Thus, while early travellers from Europe preferred to harp on the supposed barbarities of people they considered savages, their successful adaptation to harsh conditions often went unnoticed.

At the other topographical extreme, Eskimos find themselves facing surprisingly similar challenges, which they tackle with equal originality. One solution to the problem of hunting the polar bear, for instance, is to place a bent hook in a ball of whale blubber. The polar bear eats it, the blubber melts in his stomach and the hook unfolds. Another method, known as a bola, is effective for catching birds. It consists of a number of weighted strings, tied together in the middle. Thrown into a flock of birds, it spreads out in the air to become an effective snare, which entangles a bird and brings it to the ground. Among the Eskimo, human ingenuity was pushed to the limit in surviving the bitter Arctic conditions. They pioneered the use of snow goggles (with tiny slits or holes to reduce light) for hunting, waterproof parkas (made out of seal guts) and sleds.

As always in human history, however, innovation and inventiveness in what we would consider purely practical fields went hand in hand with ornament and ritual which we are accustomed to thinking of as belonging to a completely different sphere. As one eighteenth century account[6] tells of the people of the Aleutian islands:

> 'Men put into a perforation of the lower lip a piece similar to a big tooth made of white soft stone or of bone; and between the nostrils, in a perforation of the cartilage, they put certain black grass or a bone similar to a small nail; on gala occasions and more often in war, they hang in the ears and between the inserted teeth of the lower lip beads and amber rings . . . '

And another explorer[7] describes a similar encounter:

> ' . . . one of them came near to the ship, took from his bosom a kind of clay, of the colour of iron or lead, and besmeared his cheeks with it and then drove bunches of grass in his nostrils.'

Indeed, personal adornment, which may achieve special ritual significance, is another factor common to all 'primitive' peoples. The now extinct Tasmanians would daub themselves along similar lines, allowing for climatic differences:

> 'The body was rubbed over with a mixture of red ochre and the fat of the wombat, seal or kangaroo . . . dandies drew fancy streaks of red ochre and plumbago over their bodies, the artistic display of which brought no small applause from the belles of the forest.'[8]

So, it was a confusing mixture of the bizarrely unfamiliar and the technologically complicated which may have thrown anthropological thinking off-track in some of our early assessments of the capactities of 'primitive' peoples. Furthermore, some such peoples are clearly the remnants of earlier, more coherent cultures whose knowledge has become degraded. And while all undoubtedly display the capacity for logical thought, our own culture's tendency to overvalue this process may lead us to ignore the fact that even learning from experience has its limitations.

A British Colonial officer, Colonel Hodson[9] noted that the Savara people of southern India have no name for any number above twelve because, as they explain:

> 'One day, long ago, some Saoras were measuring grain in a field, and when they had measured 12 measures of some kind, a tiger pounced in on them and devoured them.'

Language and Myth

It has been argued that the development of language is the hidden factor that precipitated the artistic and technological revolution of forty thousand years ago. When language, rather than simple speech, arrived on the scene, the argument goes, abstract thought became possible.

In his 'Origins of the Modern Mind', Merlin Donald calls the myth 'the prototypal, fundamental integrative mind tool', insisting that:

> ‘Language and advanced conceptual development on the symbolic level are so closely interdependent in the brain that they appear to be inseparable. They must have taken the great leap together.’

He points out that mythic construction, building ‘models’ of the universe, was one of the earliest uses of any language.

Whatever the order of development, it does seem clear that the very structure of ‘primitive’ language and thought is entwined with myth and legend. However primitive the people, however basic their culture, they all have in place a sophisticated linguistic structure, with more than enough potential to express complex concepts. Areas of special interest to the tribe – such as social relationships or hunting terms – are defined in the minutest detail.

So visceral is the connection between language and culture, that anthropologists gratefully seize upon it as a revealing map of social mores. For example, even something as basic as the Aleut names of months – such as ‘the hunger month’, ‘the month for chewing leather thongs’ and ‘the month of the last stored food’ – testify to the hardships of survival in one of the most inhospitable areas on earth.

The Aleut regard the telling of tales not only as an art form, but as a property common to the tribe. The teller is merely the mouthpiece and begins his story with the words: ‘tanan ahwa’ - ‘This is the creation of my country.’[10] Every hunter-gatherer people has its own mythology – creation legends, tales of gods and magical spirits and of ancestors are part of the glue that binds their society together.

Even among the most cynical city dwellers of the western world, mythology has not been supplanted. One only has to look at the daily newspaper, the common property of the group, or at the constantly reinvented series of ‘urban legends’ for examples of a self-renewing mythological base. In their own way, traditional mythologies seek to approach the questions whose answers still elude mankind. They are also a solution in themselves – serving simultaneously as a cultural binding mechanism, a means of defining one’s identity and a repository for accumulated wisdom. Aside from the universal presence of legends and stories, the similarities between them are striking. Idries Shah has documented a corpus of folk tales that exist to this day across all cultures.[11]

A few excerpts from hunter-gatherer societies may be an instructive addition to this collection. Many describe the creation of the world, of animals or of natural objects. The sun and moon are obviously subjects of great interest – and themselves encapsulate and preserve carefully-gathered empirical observations. An Ainu legend, quoted by Dr John Batchelor runs:

> 'The sun and moon are husband and wife. They are divine beings whose province it is to rule the skies and the earth. The male is appointed to do his work during the day only, and the female at night. Sometimes however, they may be seen to cross the heavens in company. The divine sun has the best and brightest clothing to wear; this is why he shines so clearly.'

Similarly, American Indian Xingu tribesmen tell that the sun and the moon are twin sons. Their father was a jaguar. In the beginning, it was always dark; the boys didn't know how to create the day. They decided to trick the chief of the birds – the vulture – so that he would bring them the day. After setting a trap, the sun captured the vulture, and ordered him to send for the day. The vulture's messenger at first brought only an armband of blue macaw's feathers – it got light for a moment, but it wasn't the real day. Then he brought a yellow macaw crest – that wasn't the real day either. Finally, he called the true, red macaw – and the day dawned. The vulture explained that night would always follow the day – but that the day would always return.[12]

Creation myths bear marked similarities with one another. For example, the Mbutu Pygmies – possibly the descendants of the Paleolithic cave artists of Southwest Europe – possess creation myths strangely evocative of the biblical tales of Adam and Eve.[13]

In the beginning was a primal stone, from which grew the Tahu tree. In the tree was a chameleon, the representative of the supreme being. He heard a noise coming from inside it, and split open the trunk. Water came flowing out, and then the first man and the first woman stepped out.

The Pygmy myths are recited and acted out. They tell the story of fire, and death, linking two concepts which occur together again and again. And, like the Adam and Eve story, they investigate the origins and consequences of man's thirst for forbidden knowledge itself: Tore, a form of the Supreme Being, is swinging through the

forest. He has left his treasure, fire, for his mother to guard. But the Pygmy ancestor is watching. He grabs the fire and bears it off for his family. Tore's mother wakes up and shouts to Tore, who chases the Pygmy. But finally, he loses him. When Tore returns to his home, his mother has frozen to death. Furious, he curses mankind: in future he will die.

Many peoples have a flood myth. Ivar Lissner, in 'Man, God and Magic' quotes a version from the Kato Indian tribe:

> 'It rained, it rained every day. Every evening, every night, it rained. It rained too much, people said. They now had no fire. The streams filled, the water rose in the valleys, the water surrounded them on every side. All people went to sleep. The sky fell down. There was no more land. The waters of the ocean covered the whole earth. All the grizzly bears died, all the elks drowned, all the panthers drowned, all the deer drowned – all animals drowned.'

Other myths and stories are in fact wish-fulfillment charms – as such they resemble the processes of focussed willpower found in magical practice. Some of the 'magic songs' of the Finns whose origins may stretch back in some form to Pre- or Proto-historic days simply relate in story form a desired outcome, implying that, just as this chain of events happened once, it should happen again. Here is one for removing pain, which contains remarkable similarities to the imagery used in some modern psychotherapeutic practices, such as hypnotherapy:

> 'The vehement maid of Kipula is sitting in a lazy way on the lower end of a speckled stone, on the edge of a bulky flag, spinning pains on a copper spinning-staff, into a ball she winds the pains, into a bundle gathers them, into the water she flings the ball, to the depths of the sea she hurls it down, whence it may never more be fetched during the span of worldly time, while the moon sheds its golden light.'[14]

It is only with the rise of modern psychology that a few of the processes and functions of stories are beginning to be recognised. Cognitive pyschologists have only recently seized upon analogies as a way of encoding information – and providing 'templates' for solving problems which have been used in mythological traditions for countless millennia.

In one study[15], quoted in 'Mental Leaps' by Keith Holyoak and Paul Thagard, college students were asked a version of the following problem:

> *A patient has a stomach tumour. There is a type of ray which can destroy the tumour, but, in doses strong enough to damage the tumour, it will also damage healthy tissue. How do you use the rays to destroy the tumour without damaging the healthy tissue?*

Only about ten per cent managed to come up with a solution. However, that figure was dramatically increased – to seventy-five per cent – when they were allowed to read a version of the following story first and told to apply it to the problem of the tumour:

> *Once upon a time, there was an impenetrable fortress. There were many roads leading to it, but all of them were mined. Very small groups of men could pass down each of the roads but any large invading force would be blown up. One day, a clever general divided up his army into small groups and sent a detachment down each road. They attacked from every direction, and the fortress fell.*[16]

Although, in the version given to the college students, some extraneous material was also included in the story, they had no difficulty in applying it.

This exactly mirrors the process whereby children in Middle Eastern cultures and elsewhere are told traditional 'tales' which, it is believed by the community, will be of use to them in later life.

How successful we are at applying such analogies depends on how effectively we can transpose different elements from one story or situation to another. That is, how successful we are at using our associative powers to link what may otherwise appear to be unrelated things.

The flexibility of analogical thinking has been remarked upon. A single metaphor – like a traditional story – may simultaneously convey a plethora of messages or impacts. And this kind of thought appears to be fundamental. The similarities of metaphors in unrelated languages, for example the 'foot of a mountain', tend to suggest that they have been arrived at independently by a similiar process of mind; and psychological studies do tend to support to the view that metaphorical thought is always present in the mind, whatever other process may be being employed at the time.

In their book ‘Mental Leaps’, Holyoak and Thagard conclude:

> ‘metaphorical interpretation appears to be an obligatory process that accompanies literal processing, rather than an optional process that occurs after literal processing.’

However, the very universality of this process itself carries pitfalls. We are all too easily swept along by a powerful analogy, which we may not even recognise for what it is. It may be necessary on occasion to take a step back, and examine the process itself. Much of homeopathic magic, for example, may be regarded as the application of false associations; attempting to achieve a solution from perceived correspondences which do not, in fact, exist.

The physiologist, William Sargant, demonstrated an interesting use of analogical thinking, when he attempted to treat shell-shocked soldiers during the Second World War by allowing them to ‘work through’ their traumatic experiences under hypnosis. Where a patient’s particular trauma had been repressed beyond discovery he would suggest that the man was inside a burning tank. Although this crisis was entirely artificial, it belonged to a similar class of fear, and had the required effect:[17]

> ‘We did not always find it essential, in abreaction, to make a patient recall the precise incident which precipitated the breakdown. It would often be enough to create in him a state of excitement analogous to that which had caused his neurotic condition, and keep it up until he collapsed; he would then start to improve. Thus imagination would have to be used in inventing artificial situations, or distorting actual events . . . ’

The best mythological tales have always provided another world in which the listener can experience and learn in safety.

The stone-age myths, of course, have not survived. As such, in looking at stone-age art, we see only part of a puzzle. Some of the more bizarre figures – the sorcerer of Trois Frères, and the bear with the wolf’s head at the same location, for example – may have been well-known characters from who knows what fantastic stories, told by the flickering fire, when the day’s hunt had been carried in? What supernatural forces might those men and women have conceived in the darkness outside the mouth of their sheltering cave, in those early days?

These were the pioneers to whom every man, woman and child alive today owes a cultural debt. The breakthroughs they made, the conclusions they came to, underpin the very stucture of our own society. As Henri Brueil concludes in 'The Men of the Old Stone Age':

> 'The Leptolithics seem to us like very advanced peoples, as complex as hunting peoples living in our own times. But while these latter, defeated and banished to the less desirable parts of the world, are now but the shadow of their former selves, when we think of what men were in the reindeer age we see human groups filled with strength to expand, to discover, and to progress, possessing a moral culture far more highly developed than might be supposed from the remains of their material civilisation.'

Conclusion

Once mankind learned to think out complex or abstract problems, the way was open for a cultural and technological revolution. He was much more adaptable, able to design better tools, and to identify with the game that was his prey, which in turn allowed him to anticipate its movements, and improve his chances of a kill. This mental flexibility transformed his life, and set in motion the dizzying pace of human development we still experience today.

Looking back at our roots, and at the 'undeveloped' cultures of peoples who still live like our ancestors, we may overlook the achievements of those early human beings. As Merlin Donald, in his 'Origins of the Modern Mind' declares:

> 'All the basic properties of the human mind were present in early human cultures: thought, group decision-making and verbal problem-solving, a shared lexicon or vocabulary, linguistic conventions . . .'

Along with his ability to find innovative solutions to the problems of survival, mankind acquired a questing curiosity about problems which had never before troubled any member of the animal kingdom. He not only speculated that abstract forces governed the world – but asked himself what actions on his part could influence them. And he formulated a wide range of solutions, which in turn brought about such revolutions as art, mythology and magic.

So observers who have asked, like Carveth Read,[18] why the human mind is befogged with ideas like religion and magic, are perhaps framing the wrong question. Is it the almost automatic connection between the concrete and symbolic part of a process of mind which enables us to approach problems in a unique way?

This innate capacity of mind has had the effect of enabling man to proceed with evolutionary development on a scale undreamt of by our ancestors. Scarcely are problems recognised, than solutions follow. There is evidence to suggest, for example, that agriculture developed independently in different parts of the world: opening up new vistas of civilisation. It was a concept whose time was ripe.

Even the most primitive peoples to be found on earth today have made the great conceptual leap described in this monograph. Since that time, man has never ceased to develop, constantly adapting himself to new surroundings – yet finding similar solutions when similar conditions are presented.

Notes

1. 'Nature', 27.2.97.
2. See W. S. Laughlin, 'Acquistition of Anatomical Knowledge by Ancient Man', (in Washburn, S. *Social Life of Early Man*, London, 1962).
3. Shirokogoroff, 1935. Quoted in Rudenko, S.I. *The Ancient Culture of the Bering Sea and the Eskimo Problem*, Toronto, 1961.
4. *Anthropological Essays, presented to E.B Tylor*.
5. Laughlin, *op. cit*.
6. That of a Russian, Levashov, who spent the winter of 1768-9 on Unalaska island. Quoted by Jochelson, Waldemar: *History, Ethnology and Anthropology of the Aleut*, Carnegie Institution, 1933.
7. A Russian, Steller, quoted in Jochelson, *op. cit*.
8. Bonwick, James. *Daily Life and Origin of the Tasmanians*, London, 1870.
9. Hodson, Colonel T. *Primitive Culture of India*, London, 1922.
10. Jochelson, *op. cit*.
11. Idries Shah, *World Tales*, London, 1991.
12. Villas Boas, Orlando and Claudio. *Xingu: the Indians, their Myths*, Condor, 1974.
13. Told by Zuesse, Evan. *Ritual Cosmos*, Ohio, 1985.
14. Abercromby, the Hon John. *The Pre-and Proto-Historic Finns*, London, 1898.
15. Mary Gick and Keith Holyoak, 'Analogical Problem Solving', *Cognitive Psychology*, 12:306-55, study quoted in Holyoak, Keith and Thagard, Paul: *Mental Leaps; Analogy in Creative Thought*, London, 1995.
16. Full version in Holyoak and Thagard, *op. cit*.
17. Sargant, William. *Battle for the Mind*, London, 1959.
18. Read, Carveth. *Man and his Superstitions*, Cambridge, 1925.

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