

Shamanic and/or cognitive evolution

Mihály Hoppál

Institute of Ethnology, Hungarian Academy of Sciences, Budapest, Hungary
 hoppal@ethnologia.mta.hu

ABSTRACT – *Many misconceptions have been associated with shamanism. Recent studies, however, show a way to reinterpret basic concepts concerning shamanism. New field data from ethnology/anthropology, and studies on cognitive evolution have provided new results to enable a reconstruction of some mechanisms which contributed to early developments in the social life and intellectual history of prehistoric people. Shamanic healing methods, simple rhythmic and motor patterns and visual/symbolic representations are the focus of this analytical paper.*

IZVLEČEK – *Šamanizem je bil pogosto predstavljen napačno. Novejše študije ponujajo reinterpretacije temeljnih konceptov šamanizma. Rezultati novejših raziskav na področju etnologije/antropologije in kognitivnega razvoja omogočajo pojasniti mehanizme, ki so prispevali k zgodnjemu socialnemu in intelektualnemu razvoju človeka v prazgodovini. V razpravi se ukvarjamo s šamanističnimi metodami zdravilstva, ritmičnimi in motoričnimi vzorci ter vizualnimi in simbolnimi predstavami.*

KEY WORDS – *shamanic initiation; hunting; singing; visual symbolism; rock art; community rituals*

In this essay, I should like to present and test some hypotheses which I have put together concerning the origin of shamanism. This is important because there are a great number of misconceptions concerning shamanism in general and about its early form in particular. But as an anthropologist I want to learn more about Neolithic Eurasia from archaeology and archaeologists, and about recent findings and theories on the prehistoric cognitive (r)evolution used in the discipline neighbouring anthropology.

From a methodological point of view it is rather risky to attempt a reconstruction of early forms of cognitive evolution. That is why we shall not operate with similarities or analogies, but simpler behaviour like hunting, singing, dancing, initiation, healing, etc. These are functions hypothetically in use in early Palaeolithic times and also used up to now by those shamans I have met.

Initiation Rituals in Hunting Communities

The human need to find food to eat, the so-called *alimentary instinct*, has always been a basic human

need. It means that the first human(oid) communities needed skilled hunters, and hunting became a more and more complex action, or even a series of linked actions. Cooperation in hunting became common and important in order to have enough food. The same happened in gathering. In order to obtain food, they became acquainted with a great number of edible plants, and also herbs with healing properties, toxic plants, and even hallucinogenic species.

Andrej Wierciński, a Polish archaeologist, developed a model of initiation of a shamanistic type which is relatively unknown, in spite of the fact that it was published in 1989. Let me quote his ideas here:

“Intensification of gathering and hunting among the nomadic groups, bearing the character of a joint family, led to a clearer division of biocultural roles between the two sexes and different age categories. Women, bearing children and protecting young offspring, although helped by older children, were mainly concerned with gathering around a temporary place of stay, taking care of the fire, and preparing food; whereas, men were undertaking

distant hunting expeditions. Their life was full of dangerous events which demanded comprehensive and detailed observation of their environment, the fauna and the flora, the landscape, weather, and the sky. All the data had to be correlated with one another in meaningful mnemotechnical whole, taking into consideration symptomatic signals (cracks of twigs, sounds and trails of animals, etc.). This paves the way for the cognitive development and for thinking, based on figurative analogizing. Hence comes an additional problem as to an inter-generation transfer of quite extensive knowledge about the environment, tool production, and hunting behavior. Next, the hunter must have had at his command a very efficient human organism which could endure physical exhaustion, thermal extremities, hunger, pain, fear, etc., and he had to develop his volitional motivation (self-control). Finally, the hunting expedition demanded a coordinated and self-sacrificial cooperation of all the members of one sex, and age groups variously related to one another. It also demanded the forms of behavior directed towards the obligatory altru-

ism. This is why the upbringing and training of a skilled hunter should, on the one hand, cover an intergeneration transfer of the knowledge about the surrounding and of the hunting craft and, on the other hand, comprehensive perceptive and endurance tests. A complex model of the origin of shamanism is shown in the following diagram.” (Wierciński 1989.22)

Initiation was (and still is) an important social function which made individuals mature enough for the daily fight for survival and made them more able to endure pain, fatigue, hunger, etc. Initiation rituals forge communities more powerfully, since their participants accumulate more strength than they had before.

Exactly because of the highly complex and extremely difficult initiatory process, those who pass it successfully, eventually become leaders of a group. As we know from our ethnological cross-cultural research the shaman was (and still are) the informal group leaders who provide protection for the group at a

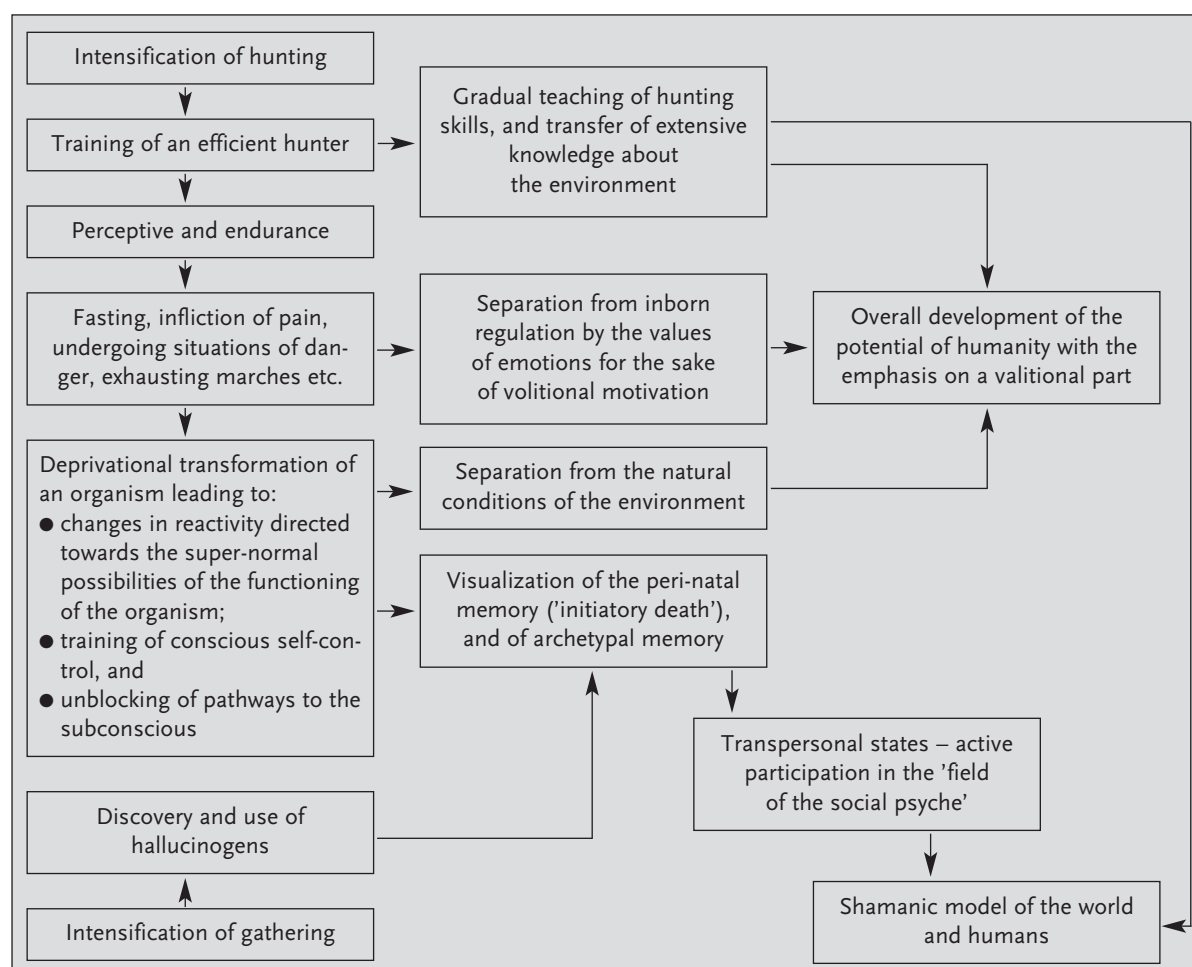


Diagram 1. Wierciński's model of shamanic initiation.

physical level, and as a charismatic individual, was the opinion leader in spiritual matters. As Michael Winkelman puts it: the shaman led the most important group activities, an all-night community gathering for healing which provided a direct encounter with the spirit world. Drumming and dancing ecstatically, the shaman recounted a dramatic encounter with spirit forces. After collapsing from exhaustion, the shaman entered into a phase of 'soul flight' or 'soul journey', in which the shaman experienced entering the spirit world to do battle with evil forces. If successful, the shaman was able to ward from the attacks of sorcerers, or recover the patient's soul from the spirits that had taken it (Winkelman 2002:72).

As psycho-biological understandings of mystical and religious states of consciousness have developed, shamanism has emerged as humanities' original 'neuro-theology' (as Winkelman 2004 labelled it in one of his papers), and bio-psychosocial healing practice. He proposed that shamanism contributed to human social and cognitive evolution by providing mechanisms for enhancing symbolic thought, and manipulating and integrating the functional systems of the brain. He has outlined this neurological basis for shamanism in *Shamanism: The Neural Ecology of Consciousness and Healing* (Winkelman 2000).

The universals of shamanism present a challenge to the rationalistic view that these practices are delusional. The universal principles of shamanism reflect an underlying biological basis that provides adaptive mechanisms that have made shamanism a central cultural institution of thousands of cultures and across tens of thousands of years. This widespread distribution of shamanism reflects its adaptive value. The first and most important (and thoroughly studied) social function of shamans was healing.

Healing and Music

Recently there have been new studies which emphasised the shamanic origins of music and healing (Hoppál 2002). The very first element of any healing séance is that the shaman(ess) calls on his/her helping spirits. In most cases this happens through song, and the invocational melody is usually accompanied by some kind of instrument.

The most reliable descriptions of Siberian shamanic rituals come from researchers who are themselves members of the nation in question and, what is more important, still live among their own people. Leonid Lar is a Nenets researcher who answers the above

description and who has published several volumes of text collected during field work. In one of these he gives an authentic explanation of the role of shamanic song in rituals:

"An indispensable part of the shamanic séance is the shamanic song. The shaman used to call his helping spirits in song, and talked with them in song, accompanying the whole process on his drum." (Lar 1998:39)

The Nenets believed that, together, the sound of the drum and the song of the shaman were able to invite the benevolence of the helping spirits and that, on final balance, this had a positive influence on the outcome of the entire séance.

During the healing séance, they had to find out the reason for the illness, which is why the shaman had to make a symbolic journey through both the 'upper' and the 'lower' worlds (Kazakevitch 2001) in order to bring back from either of these places the soul of the sick person. This journey was described in detail in the songs, and the song also included naming the helping spirits that they had invited and those that actually came. The tunes of the spirits were different from each other and were easily distinguished both on the basis of the melody's structure and of rhythm (Seykin 1996; 2000). Onomatopoeia was a distinguishing feature of these songs, as they represented animal-shaped helping spirits (e.g. the bear, the loon, the reindeer or the moose) through imitating the characteristic sounds they make (Dobzhanskaya 2002:84). Onomatopoeia is actually the beginning of music, the first appearance of the musical ability of man. According to ethno-musicologists, in this fashion the songs of shamans retain memories from the times of the original emergence of music (Rouget 1985). An important characteristic of healing shaman music is that, besides the helping spirits, the individual shamans themselves each have their own distinguishing tune, sometimes more than one, and this is the case in distant South America as well as in Eurasia (Walker 2003).

Thus it is hardly surprising that the power of individual shamans was measured by the number of songs they knew. In other words, the shaman's power lay in his songs, and the power of the instruments was only an additional force. This is the impression I received when in February 2003 I saw a Daur shamaness (Hoppál 2005) who, after the healing séance, went on singing to the patient for a long time, giving instructions and advice to the young girl, who

hearing the dramatic song, sobbed and received the healing song kneeling and bowing to the ground. My impression was that the healing power emanated from the singing voice (*Newman 1998.267–272*), and from drumming (*Harner-Tryon 1992*).

Repetition and Rhythm

There is another important element we must mention when talking about music in shamanism, and this is the fact of repetition. Films about the last shamans of the Nganasan people who live in the far north show quite clearly that one of the most important potent features of shamanic song is repetition. Among the Nganasan, who live on the Taymir Peninsula, this was the task of the shaman's assistant (*touptusi*). Let us quote Carolyn Humphrey's evocative lines on this phenomenon, in connection with Daur shamanic song.

"The refrains, which had to be repeated by competent assistants leading the whole audience, were essential to raise the shaman's soul energy. The shaman's body channels were opened by means of the smoke of a sacred plant to enable soul energy to travel out and spirit energy to come in. Rhythmic words, melody and vibration inspired soul energy." (*Humphrey 1996.234*)

In some ways the same idea is referred to by a Finnish ethno-musicologist in an article analysing Selkup shamanic songs. 'Shaman songs have somewhere an element of recurring pulse structure' (*Niemi 2001. 156*), which eventually lead to the production of endorphins in the human body (*Prince 1982*). This is the hypothesis that recent research on the cognitive evolution of our Paleolithic ancestors has been aiming to substantiate (*Mithen 2006*). It is interesting to quote an American researcher:

"A range of evidence indicates that shamanistic elements were already part of the cultural practices of the Middle Paleolithic. This evidence includes: 1. the homonids basis of chanting, music and psycho-emotional group ritual activities based in mimetic capabilities, and 2. the soul of shamanic practices in meeting a number of individual and societal needs for shared identity and communication. Music's effects include the induction of slow-wave brain wave patterns typical of other altered states of consciousness. Music's adaptive role includes its ability to promote group cohesion and co-ordination, enhancing synchrony and co-operation among group members." (*Winkelman 2002.78–79*)

In other words, the groups of humans who banged bones together, hitting on a joint rhythm (*Frolov 1988.3*), were practicing simple forms of co-operation with the leadership of their shamans. Joint dances and collective drumming represented another developmental step, which led to the further development of cognitive structures – in other words when they were able to distinguish different rhythms by the 'music modules' within the brain (*Mithen 2006.64*).

Visual Representations of Cognitive Evolution

The purpose of our study is to offer a survey of recent research which deals with the signs of rock art and their symbolic meanings. Anthropological and archaeological approaches differ from each other; hence it is instructive to become acquainted with the views of groups of researchers, their methodological differences and the configurations of their results. Theoretically, we have a relatively large corpus of signs in rock drawings available to us; but there are few types, a fact that makes it difficult to understand their meanings and the functions (*Hoppál 2003*).

If we look carefully at the features of the Neolithic rock art of North Eurasia, and within this, of Western Siberia, we can see that – as in Paleolithic art – the main subject is the animals. Two Russian Scholars (*Okladnikov and Martynov 1972*) have confirmed that this kind of art is typified by a lively realism. However, in the Bronze Age a completely new method of images came into existence; these two authors stress that at the end of the Neolithic and in the Bronze Age, the use of signs steadily increased, as did the role of symbols; and the art of this period is filled with abstract and conventional symbols. The meaning of the earlier pictures was obscured and the early images were used as signs, and symbols. However, the analysis of the symbols of that period, an attempt to unravel their meanings, raises a number of difficulties. At this point we must make a brief detour into the concepts of sign and symbol.

It is worth re-examining the theory which proposes that the development of art in general moves from a realistic picture to an abstract symbol, a theory to which experts in prehistoric art so often refer. Authors of some publications have taken the position that in the use of signs people developed various types of signs successively, which was not along a simple line of development. In other words, the 'invention' of the symbol can be traced back to a much earlier age than the Neolithic (*Wierciński 1983*). Palaeolithic 'realism', which includes some really mar-

vellously faithful 'drawings' in cave paintings can not be placed in direct contrast to the use of simple graphic signs, since in the cave art a whole range of symbolic representations can be found, the most important of which is hunting magic. The latest research testifies to the clear existence of sign systems even in the early Palaeolithic.

Okladnikov and Martynov state that Siberian rock drawings used many signs which were inherited from their ancestors; this becomes even clearer in the light of Alexander Marshack's research. He is concerned with the use of symbols at the end of the Palaeolithic, and the first appearance of recognisable pictograms on the basis of archaeological findings. He revealed scratches that recall fish shapes on the smallest objects (e.g. mammoth tusk fragments). He believes that these drawings should not be seen as artistic, but as the beginnings of a cognitive process (*Marshack 1972*); this led people to recognise the motif-character of simple zig-zag lines, and later, for example, that the repetition of the seasons could be well illustrated with the help of such signs. These scratches could be, according to these hypotheses, a record of the first prehistoric calendar. The common method of perception, the conscious use of symbol, the identified motifs and the repeated movements, lead to the development of a capacity for abstraction, and over a long period to the formation of the cave and rock art in Siberia.

For the Russian authors, the above arguments about the early development of art undoubtedly suggest an aesthetic attitude in which realism is on a 'higher scale' than symbolic art. At the same time, symbolic signs were an important step in the development of human ability – the creation of symbols is one of the proofs of the capacity for abstract thought. The conscious use of signs is an important point in the intellectual development of human beings. Therefore it is not surprising that in recent years there have been many studies which examine the art of the earliest times in terms of the use of signs and symbols (*Lewis-Williams 2004*). The possibility for a semiotic interpretation emerged based on the obvious idea that the rock drawings at the time they were made were signs which, as in almost every picture, were intended to communicate, to indicate something to others, to members of the community. Our task is thus to understand and explain this ancient sign language (*Hoppál 1992*).

There is another approach which also contributes to the explanation of the formation of the early use of

signs. Neolithic people – and their ancestors and hunter successors even until today – met signs in their most simple form every day: the footprints of animals when they were hunting. In the language of semiotics this sign of type is known as an index, a sign which is immediately connected or connects with the signified object – the foot print signifies the animal itself. Naturally this goes further – these traces have extraordinary characteristics; that is, they convey information about the animal to those who know how to read them (for example, the weight, sex, size and age of the animal). We could say that this simple group of signs was of great iconic importance, which contributed to a great extent to the formation of sign usage, and to the recognition of the iconic character of signs.

The appearance of footprints or handprints – or drawings representing them – in rock art possibly had a magical significance, too; however, we believe that it is better to see them as the development of human cognitive capabilities (*Marshack 1972*). In terms of semiotics the sign is more iconic – that is, it is similar to the object in at least some details – but it has broken away from it; that is, not the whole figure is depicted, but a detail only, the form or print of a hand. We could say that this type of sign is half way to being a symbol – in other words, an arbitrarily selected symbol. That this truly came about at the end of the Neolithic period, the transition period to the metal age (that is at the turn of the first millennium BC) as Okladnikov and Martynov believe is yet to be confirmed.

Apart from the earlier mentioned indices (eg. the footprint), signs which are based on the similarity between the sign and the signified object are iconic, while the third main sign type is the group of symbols which are made up of completely arbitrarily selected signs, the use of which established a preliminary (*tacit*) agreement among the members of the community. Clearly this supposes the most developed and conscious use of signs. This all means that this knowledge came to humanity very early. So, for example, symbolic scenes of reproduction – recognisable precisely because of their iconic features – were drawn very early. With the help of these signs they believed they could ensure fertility and an abundance of game. We can say that the people of prehistory were not just 'naive' materialists, but conscious, sign using social beings. V. N. Toporov, on examining the rock paintings of the late Stone Age, wrote about the use of symbols by Palaeolithic people as if they were the beginning of the appearance of poetic sym-

bols. He looked at Western European cave painting, the art of 'underground sanctuaries', where the notion of the power of signs was developed during sacred-ritual activities by ancient peoples. The emergence of the sign of the sun, which is everywhere circular, and its connection with other depictions, is the first obvious clue that its objective was to mediate some sort of more complicated message (*Toporov 1976*).

Returning to the deer and sun mythology connection, it could be said that the golden sun-deer motif was in all probability significant for early nomads, but the rock drawings indicate that, although the original root and formation of the symbol goes back to Neolithic Siberian culture, it spread and survived to become a product of the Bronze Age. Okladnikov and Martynov (1972:226) see that Neolithic peoples did not personify the sun – in the Siberian rock art the sphere of the sun and elks are usually separate, although in one case, precisely on the shaman drummer drawing, the symbol of the sun appears on the back of an elk cow.

The sun-deer – whether elk or reindeer – was a frequent feature and remained in Siberian mythology (*Martynov 1991*). A depiction of it can be seen on a rock beside the Tom River – its monumental proportions seem to be a projection of the earthly and upper worlds in the form of a deer. With the help of the Siberian Tagar Culture's bronze (and gilded) deer it is possible to date fairly accurately this huge rock drawing to about the V-IV century BC. This is the period when the ancestors of the Hungarians appeared on the southern steppes of Siberia in a wave of nomadic horsemen. However little we know about the living areas and shelters of our ancestors in those times, the Tom River rock drawings, along with the Tagar culture objects, precious objects that survive, are important structural elements in the reconstruction work of the Ob-Ugrian, and more generally, Siberian mythology. An important task in the next decades will be to reconstruct the mythology within one big language family, namely of the Uralian peoples in the Siberian area; in this task the religious notions of far distant territories are possibly of use (see *Siikala-Napolskikh-Hoppál eds. 2006*).

In the reconstruction of the conceptual systems of the people who did the rock drawings, the beliefs, myths and legends of still surviving ancient Siberian peoples will play an important part. Russian researchers have used this method to reconstruct the origins of the history and folklore traditions of extinct

peoples. But this method and practice must be used only on condition that it is understood that spiritual traditions have changed, albeit slowly, over centuries and indeed millennia, and that is why the remnants of these mythologies must be used with reservations, and undergo strict scrutiny (*Crook 1999*).

Rock Art and Community Rituals

The Neolithic art of the Siberian hunters was consequently a continuation, under new historical conditions, of the basic traditions of Paleolithic realistic art. It absorbed the artistic attainments of the preceding era. Here we find representation of animals in profile, a convention that was formulated in Paleolithic art.

It must be emphasized that the basis of Asiatic thought and style remained as before in the north Asiatic Neolithic, because the basic economy and way of life of the hunters changed little. True, there were external discontinuities at the beginning of the Holocene. Glaciers and mammoths disappeared; the Siberian forests filled with moose, and the tundra with reindeer. Hunting conditions changed. But hunting remained the basis of the North Asiatic foraging economy.

The Neolithic art of Northern Asia which has survived to our times is represented basically by three creative genres: ornamentation, sculpture, and numerous depictions on cliffs. The subjects of this art reflect the economic evolution of this era and as a whole have the following fundamental characteristics: (1) animals take a primary role in petroglyphs, while people are clearly secondary; (2) an interesting combination of live, dynamic realism and conventionalism may be observed in the artistic communication of images; and (3) the ideational, semantic bases of this art constitute the world outlook of hunters and primitive hunting magic.

In Neolithic antiquity, cliffs were cult sites, 'clan sanctuaries' (*Martynov 1991:12*). At their foot, on a stone ledge, the ancient hunters evidently conducted clan festivals in honour of their ancestors, spirits protecting the clan animals, and the omnipotent sun. They represented the reproduction of animals, scenes of successful hunts, and the gaining of spirit favours in religious spectacles, dances, and songs. Evidently these festivals ('animal ceremonialism', see *Siikala 1984*) took place in the spring, since concentric circles representing the sun are found among the drawings (see *Okladnikov and Martynov 1972:155*).

The drawings, pecked by an able human hand and incised into the rock, are simple and truthful. They transmit in lively fashion the image of the taiga dweller, the mighty moose. In these drawings, the animal's fundamental features – the immense chest, the characteristic hump of the muzzle, the fleshy lips, the long thin legs, and the distinctive beak hump – are brought out with amazing skill. Many drawings are distinguished by masterly execution. Among them are the remarkable depictions of lightly, timidly treading moose, and of bounding deer on the upper rock of the Tom River assembly. On this upper rock, too, are pecked drawings of an owl and a crane. These are so accurate and precise that even their feathers can be discerned.

In this essay we have examined some phenomena of community rituals, especially healing ceremonies which are considered neuro-biologically mediated, complex forms of social bonding. Recent studies in medical anthropology have pointed out that ritual therapeutic experiences rely on patients' own healing processes by means of various altered states of consciousness that healers are able to control. *"Ritual trance invariably occurs in social context, and the healer's personality and the expectations of the community are profoundly involved in the induction of altered states of consciousness. Trance state is regarded as a result of the mobilisation of endogenous opiates, as an activation of the organism's defensive mechanisms in face of the stress of ceremonial. On the other hand, there is a growing body of evidence that opiate mechanisms are involved in social behaviour as well, especially in symbiotic*

bonds. It is suggested that this is the neurobiological reason why attachment facilitates trance induction." (Frecka and Kulcsár 1989:84). The homeostatic role of social relationships as a powerful regulator also played an important role in periodically reinforcing social relations within the community of our ancestors in prehistory.

The presence of a community in shamanic healing practices produces therapeutic effects at psychological, social and physiological levels. The communal activities elicit psychosocial support and the mammalian attachment system, provoking the release of endogenous opiates. These endogenous opiates provide direct stimulation of the immune system, enhance feeling of well-being, and intensify group bonding experiences. Shamans use ritual activities and symbols to elicit physiological and emotional responses and produce healing. The activation of the opioid system produces euphoria and a sense of belonging, enhancing coping skills, the maintenance of bodily homeostasis, tolerance of stress and group psychological synchronization. This enhancement of community synchronization promotes identification with others and the development of an integrated sense of self (Winkelman 2004:6).

Community relations have been reinforced, enhanced, which evidently means a kind of psycho-biological therapy, group therapy which also had positive effects on individuals. Cyclical rituals and the special ritual use of plant hallucinogens stimulated the emergence of shamans (Ripinsky-Naxon 1998:148), evidently based on a shamanic cognitive revolution.

∴

REFERENCES

- CROOK S. 1999. Rock Art and Shamanism. *Anthropology Today* 15(2): 24–25.
- DOBZHANSKAYA O. E. 2002. *Pesnya Hotare. (Song of Hotare... The Nganasan Shaman's Ritual: an Experience of Ethnomusicological Investigations (with an English summary: 84–85.)* Izdatel'stvo Profna, St. Petersburg.
- FRECSKA E. and KULCSÁR ZS. 1989. Social Bonding in the Modulation of the Physiology of Ritual Trance. *Ethos* 17: 1: 70–87.
- FROLOV B. A. 1988. Primitive Rock Drawing and Musical Anthropology. In Papers for the 12th ICAES, Zagreb, July 24–31. Nauka, Moscow.
- HARNER S. D. – TRYON W. W. 1992. Psycho-immunological Effect of Shamanic Drumming. In Hoppál M., Pentikäinen J. (eds.), *Northern Religion and Shamanism*. Akadémiai Kiadó, Budapest – Finnish Literature Society, Helsinki: 196–204.
- HOPPÁL M. 1992. On the Origin of Shamanism and the Siberian Rock Art. In A.-L. Siikala and M. Hoppál (eds.), *Studies on Shamanism*. Finnish Anthropological Society and Akadémiai Kiadó, Budapest: 132–149.
2002. *Das Buch der Schamanen, Europa und Asien*. Ullstein, München.
2003. Signs and Symbols in Siberian Rock Art. In L. Tarkka (ed.), *Dynamics of Tradition. Perspectives on*

- Oral Poetry and Folk Beliefs*. Finnish Literature Society, Helsinki: 171–183.
2005. Trance and Sacrifice in a Daur Shamanic Healing Rite. *Shaman 13*: 61–78.
- HUMPHREY C. with U. ONON 1996. *Shamans and Elders. Experience, Knowledge and Power among the Daur Mongols*. Clarendon, Oxford.
- KAZAKEVITCH O. 2001. Two Recently Recorded Selkup Shamanic Songs. *Shaman 9(2)*: 143–152.
- LAR L. A. 1998. *Shamani i bogi. (Shamans and Gods)*. Institut problemi osvoyeniya Severa, Tyumen.
- LEWIS-WILLIAMS D. 2004. *The Mind in the Cave. Consciousness and the Origins of Art*. Thames and Hudson, London.
- MARSHACK A. 1972. *The Roots of Civilization. The Cognitive Beginnings of Man's First Art, Symbol and Notation*. McGraw-Hill Book Company, New York–Toronto.
- MARTYNOV A. I. 1991. *The Ancient Art of Northern Asia*. University of Illinois Press, Urbana and Chicago.
- MITHEN S. 2006. *The Singing Neanderthals. The Origin of Music, Language, Mind and Body*. Phoenix, London.
- NEWMAN P. 1998. *Therapeutic Voicework. Principles and Practice for the Use of Singing as a Therapy*. Jessica Kingsley Publ., London–Philadelphia.
- NIEMI J. 2001. A musical Analysis of Selkup Shamanic Song. *Shaman 9(2)*: 153–167.
- OKLADNIKOV A. P., MARTYNOV A. I. 1972. *Sokrovishcha tomskikh pisanits. (Treasures of the Tom river Rock Art)*. Iskusstvo. Moskva.
- PRINCE R. 1982. Shamans and Endorphins: Hypothesis for a Synthesis. *Ethos 10*: 409–423.
- RIPINSKY-NAXON M. 1998. Evolution, Cognition, and the Origins of Shamanism. In C. Scharfetter and C. Rättsch (eds.), *Welten des Bewusstseins*. VWB Verlag für Wissenschaft und Bildung, Berlin: 137–160.
- ROUGET G. 1985. *Music and Trance: A Theory of the Relations between Music and Possession*. Chicago University Press. Chicago.
- SIHKALA A.-L. 1984. Finnish Rock Art, Animal Ceremonialism and Shamanic World View. In M. Hoppál (ed.), *Shamanism in Eurasia: I*. Herodot, Göttingen: 67–84.
- SIHKALA A. L., NAPOLSKIKH V., HOPPÁL M. (eds.) 2006. *Encyclopaedia of Uralic Mythologies. vol. 2. Khanty Mythology*. Akadémiai Kiadó, Budapest and Finnish Literature Society, Helsinki.
- SEYKIN J. I. 1996. *Muzikal'naya kul'tura narodov Severnoi Azii. (The Musical Culture of the Peoples of the North)*. Ministry of Culture, Yakutsk.
- SEYKIN J. I. (ed.) 2000. *Musical Ethnography of Tungus-Manchurian Peoples*. Abstracts and Papers of International Conference, Aug. 17–23. 2000, Yakutsk.
- TOPOROV V. N. 1976. Towards the Origin of Certain Poetic Symbols: The Paleolithic Period. In H. Baran (ed.), *Semiotics and Structural Reading from the Soviet Union*. Institute of Arts and Science Press, White Plains, New York.
- WALKER M. 2003. Music as Knowledge in Shamanism and Other Healing Traditions of Siberia. *Arctic Anthropology 40(2)*: 40–48.
- WINKELMAN M. 2000. *Shamanism: the Neural Ecology of Consciousness and Healing*. Bergin Carvey, Westport (CT).
- WINKELMAN M. 2002. Shamanism and Cognitive Evolution. *Cambridge Archeological Journal 12(1)*: 71–101.
2004. *Shamanism as Neurotheology (MS)*.
- WIERCIŃSKI A. 1983. Symbol and Symbolisation. *Ethnologia Polona 9*: 33–44.
1989. On the Origin of Shamanism. In M. Hoppál and O. von Sadvosky (eds.), *Shamanism: Past and Present. Part 1*. Ethnographic Institute, Hungarian Academy of Sciences, Budapest – International Society for Trans-Oceanic Research, Los Angeles/Fullerton: 19–23.