



# The Cognitive Value of Hallucinations

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## Abstract

With beginnings probably dating back to the end of the Middle Palaeolithic period, shamanism seems to be predominantly connected with the use of hallucinogenic agents and the experiences resulting therefrom. For this reason it is worth asking how the shamanistic cultural complex could function over such a long period of time in adaptive terms if the substance of its practice and ideology included the processing of information based on hallucinations. In the light of contemporary nomenclature, the latter are understood as inadequate erroneous perceptions. Accepting such a concept of hallucinations, it is possible to explain the long currency of shamanism on the basis of evolutionary cognitive error management theory, costly signalling theory, or evolutionary psychiatric group-splitting theory. However, the dominant approach to the phenomenon of hallucination may be questioned, and it is conceivable that at least some of its contents constitute a mediated projection of subliminal percepts preceding an experience of hallucinations or co-occurring with them. Transformations of hallucinations preceding their entry to the field of consciousness may be governed by the rules of association described by Herbert Silberer's theory of self-symbolisation and those brought to light by such researchers on subliminal perception as Otto Pötzl, Charles Fisher, or Norman Dixon. From this new perspective, a new definition of hallucination must be developed – a definition that will take the actual cognitive value of this phenomenon into consideration and be more adequate for providing a description of the full cognitive dynamics of the shamanistic complex.

**Key words:** shamanism, hallucinations, terror management theory, subliminal perception, symbolisation

**Słowa kluczowe:** szamanizm, halucynacje, teoria zarządzania błędami, percepcja podprogowa, symbolizacja

For a scholar specialising in the comparative study of religion, the issue of hallucinations cannot remain neutral, considering both the phenomenon of experiencing involuntary or induced visionary states that is common across a variety of historical religious traditions and the global distribution of shamanism across traditional

societies and its occurrence in archaic societies presumed on the basis of ambiguously interpreted archaeological data. Mythological reconstructions proposed by Michael Witzel, who dates the genesis of mythology in general and shamanic mythology in particular for two archaic migrations of two prehistoric populations: the Gondwana type (of circa 65,000 years ago) and the Laurasian type (of circa 40,000 years ago), can be considered problematic.<sup>1</sup> Witzel connects occurrence of shamanistic motifs with mythological material of migrations of the latter type.<sup>2</sup> Yet, a greater evidentiary and circumstantial strength may be attributed to spatial and temporal scope of the data gleaned from Palaeolithic art rock and cave paintings analysed by Jean Clottes and David Lewis-Williams,<sup>3</sup> but first and foremost to the discovery in 2010 by archaeologist and botanist Sheila Coulson and her team of the Rhino Cave grottoes, located in the Tsodilo Hills in Botswana, an area inhabited by the San bushmen, with artefacts related to snake cult and dating back to 70 thousand BC.<sup>4</sup> It is undoubtedly the humankind's oldest known centre of cult with the structure suggesting that the smaller cave held a site for the person of a shaman, in the state of trance becoming transformed into a python spirit represented by a two-tonne block of rock located inside the cave and representing the python's head.<sup>5</sup> These recent data seem to suggest that it would be prudent to date the beginnings of shamanism for the end of the Middle Palaeolithic period (350,000–40,000 BC). Therefore, it is not an exaggeration to state that the humankind shares the history of approximately 100,000 years during which it had dominantly functioned according to the shamanic model of the world, that is the period of time tens of thousands years longer than the time of existence of the oldest of the historical religions we are familiar with. According to Polish anthropologist Andrzej Wierciński, the rise of shamanism is to have stemmed, as an evolutionary process, from two fundamental characteristics of the demographically-conditioned process of intensification of the hunter-gatherer economy.

#### Shamanism

resulted from the meeting of two factors: (1) the need to obtain skilled hunters because of intensification of hunting, and (2) the discovery of hallucinogens due to the intensification of gathering. The situation thus arose as follows:

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

<sup>1</sup> M. Witzel, *The Origins of the World's Mythologies*, Oxford 2013, pp. 105–186, 279–356.

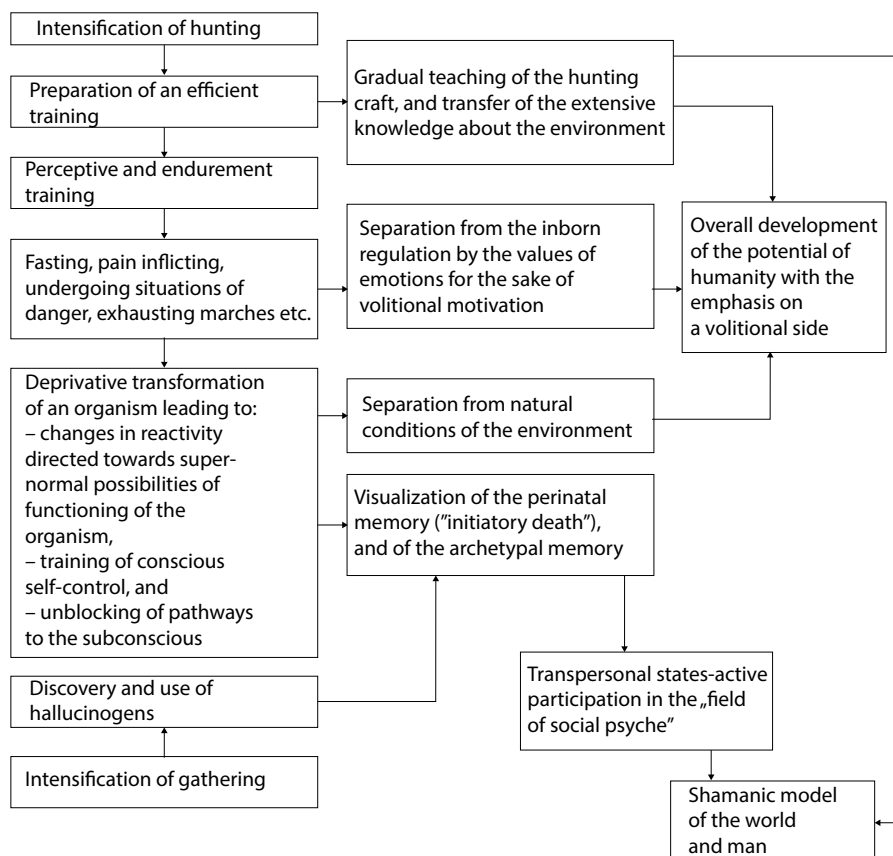
<sup>2</sup> M. Witzel, *op.cit.*, p. 422.

<sup>3</sup> J. Clottes, D. Lewis-Williams, *Les chamanes de la préhistoire. Text integral, polémique et réponses*, Paris 2001.

<sup>4</sup> S. Coulson, S. Staurset, N. Walker, *Ritualised Behavior in the Middle Stone Age: Evidence from Rhino Cave, Tsodillo Hills, Botswana*, "PaleAnthropology Society" 2011, pp. 18–61.

<sup>5</sup> Coulson and her collaborators display a far-reaching discretion in terms of interpretation of the obtained data in shamanistic complex categories, nevertheless, such an interpretation is admissible, should one accept an assumption on incidence of various types of shamanism (their family resemblances) as manifest in the continuum from an individual to collective trance and taking into account the research into relationships between shamanism and hunter-gatherer mode of economy, see: D.S. Whitley, *Hunter-gatherer religion and ritual* [in:] V. Cummings, P. Jordan, M. Zvelebil, *Oxford Handbook of the Archaeology and Anthropology of Hunter-Gatherers*, Oxford 2014, pp. 1224–1228.

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 intergeneration 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 altruism. 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.<sup>6</sup>



<sup>6</sup> A. Wierciński, *On the origin of Shamanism* [in:] *Shamanism: past and present*, M. Hoppal, D.J. von Sadovszky (eds.), Budapest–Los Angeles 1989, pp. 21–22.

### According to Wierciński:

the use of hallucinogens was responsible for the origin of the systems of initiation of shamanistic type: the hallucinogens were introduced into the organism possessing a high degree of self-control which was previously prepared by means of deprivation. [...] this had deep cognitive effects and changes in personality.<sup>7</sup>

Wierciński's theory entails a number of diverse consequences, among others the fact that for entire millennia the primitive man functioned in a mythical-ritual system oriented on ASCs with a particular emphasis on hallucinations. Hence, the issue of hallucinations opening to a varied degree counterintuitive worlds inhabited by counterintuitive beings should be treated by the evolutionary cognitive studies of religion as central on a par with the issues related to dreaming. It has already been afforded precisely such a treatment by the scientific study of religion, although the connection between the shamanic techniques of ecstasy and the use of hallucinogenic substances was not initially as obvious as it is today as confirmed by the statement from Lewis-Williams: "Hunter-gatherer shamanism is fundamentally posited on a range of institutionalized altered states of consciousness."<sup>8</sup>

As I have already described it, in the paradigmatic work of the famous Romanian scholar, Mircea Eliade, *Shamanism: Archaic Techniques of Ecstasy*<sup>9</sup>,

one searches with difficulty for a certain uniform concept regarding the use of hallucinogenic substances and the function of hallucinations in traditional and archaic societies, although instead of that one may find a host of vague and often mutually contradictory statements connected with this topic, where the propositions of evaluating nature rather than the genuine research of the work's author, M. Eliade, find an expression. Their main accents may be summarized as follows: the use of hallucinogenic substances in shamanic techniques of ecstasy does not belong to their primary repertoire, having a secondary character displaying their hybridization. This strong view, several times reiterated by the Romanian researcher, is in no way disturbed by the fact that in various parts of the mentioned text this same author considers the use of narcotics (for such is the confusing term often used by Eliade to define hallucinogenic substances) to be an element of shamanism analogical to the use of shaman's drum, or to be equally included within the list of ritual invariables which accompany tribal initiations or those leading to membership of secret societies. Of interest is that the negative opinion concerning hallucinogenic substances in the book is expressed most often in the context of Siberian shamanism, with almost no mention where the discussion concerns the use of such substances in South American shamanic traditions.<sup>10</sup>

The research into the relationship between shamanism and use of hallucinogenic substances conducted after Eliade's monograph had been published by such authors as Weston La Barre, Geraldo Reichelt-Dolmatoff, Marlene Dobkin de Rios, Peter Furst, Bruce Lang, Chareles Grob, and others distinctly demonstrated that Eliade's

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<sup>7</sup> *Ibidem*, p. 23.

<sup>8</sup> J.D. Lewis-Williams, *A Cosmos in Stone: Interpreting Religion and Society Through Rock Art*, Alta Mira 2002, p. 196.

<sup>9</sup> M. Eliade, *Shamanism: Archaic Techniques of Ecstasy*, Bollingen Foundation 1964.

<sup>10</sup> T. Sikora, *Użycie substancji halucynogennych a religia*, Kraków 2003. p. 389.

view requires to be corrected and that the question at issue requires an in-depth investigation.

What, therefore, is the fundamental problem to be explained in connection to the issue of hallucinations in the context of their principal role in archaic and contemporary traditional societies? To provide an answer to this inquiry, it is fitting to examine the meaning of this notion on the basis of the dictionary that presently enjoys the status of the basic reference book in this scope: "Hallucination can be defined as a percept, experienced by a waking individual, in the absence of an appropriate stimulus from the extracorporeal world. [...] The term hallucination comes from the Latin verb *\*halucinari* which means to wander mentally or to be absent-minded. It has its root in the Greek verb *aluein*, which means to wander or to be distraught."<sup>11</sup>

If we find this definition of the phenomenon of hallucination as an inadequate, erroneous perception to be obligatory, and if we refer it to the principal subject of our deliberations, then, we will be forced, in defining the figure of the shaman, to logically recognise him to be a person specialised in this scope, a person who in the waking state erroneously experiences a perception of a given state of affairs despite the lack of an adequate stimulus from the external world. In other words, a shaman is a person who periodically experiences the external world in a counterfactual manner. Adopting etymology as a starting point, a shaman is a person who wanders mentally, is absent-minded or distraught. It would seem that such a definition of shamanism cannot be challenged and everything is clear. Yet, from the perspective of evolutionary and cognitive studies into the phenomenon of religion, such a definition must be a source of endless theoretical and methodological problems. It is so since a fundamental question arises, namely what the adaptive value of hallucinations and shamanic type of social control is. How small communities which, in light of the above-given definition of hallucinations, to a large degree function on the grounds of recognising as an authority people specialising not exclusively, but in an exceptionally substantial manner, in experiencing hallucinations, how such small communities survived under extremely difficult conditions over tens of thousands of years. To perform a simple simulation, let us imagine a small group of people directed by a hallucinating, absent-minded and distraught man in the Amazon jungle, or Siberian tundra, or vast terrains of African subtropical steppe with survival problems characteristic of these ecosystems. Even assuming that such a group has at its disposal a resource of adequate, traditional knowledge about the surroundings, this will not be of much assistance for the group if in its actions it follows hints from a man who, due to his specialisation, makes decisions on the basis of inadequate perceptions occurring "in the absence of an appropriate stimulus from the extracorporeal world."

How can one attempt to solve the paradox of adaptive usefulness of erroneous inadequate perceptions stemming from the commonly established definition of the phenomenon of hallucinations? A host of theories has been proposed in this matter. In principle, all of them question the cognitive value of hallucinations, yet in the frames of a broader theoretical system of reference, they do not rule out their adaptive value.

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<sup>11</sup> J.D. Bloom, *A Dictionary of Hallucinations*, Berlin–New York 2009, p. 218.

The error management theory may provide the broadest system of reference for them. This theory, represented by Johnson, Haselton, Buss, and Nettle,

suggests that if the costs of *false positive* and *false negative* decision-making errors have been asymmetric over human evolutionary history, then natural selection would favor a bias towards the least costly error over time (in order to avoid whichever was the worse error). So, for example, we have a bias to sometimes think that sticks are snakes (which is harmless), but never that snakes are sticks (which may be deadly).<sup>12</sup>

In turn, the group-splitting theory (proposed by evolutionary psychiatrists Anthony Stevens and John Price) is an example of a theory which can be logically placed within the frames of the metatheory that the error management theory is.<sup>13</sup> In their approach, in archaic communities, people characterised by a high degree of hallucinatory experiences were also characterised by a dissociative personality, typical of people with disorders which nowadays are classified as borderline, schizotypal or paranoid personality disorders. Due to the occurrence of these disorders, they were supposed to be predisposed to cause splits within the group, which may have led to its division into smaller groups with higher adaptive capabilities in the scope of mastering and taking advantage of a given ecumene. From this perspective, the apparently erroneous following of the individual who in his actions is guided by contents of hallucinations as inadequate perceptions, in a longer timeframe could result in increased adaptivity and fitness of the humankind as a whole.

It does not necessarily offer us any consolation, yet from the perspective of the evolutionary error management theory, the truth does not always have a higher adaptive force than falsehood.

Analogically, the costly signalling theory proposed by Joseph Heinrich, within which the shaman guided by hallucinations as inadequate perceptions is, nevertheless, the master of the ritual, might be a theory subordinate to the superordinate error management theory. Such a ritual, despite potentially being completely or partially derived from hallucinatory experiences, may intensify socialisation (E. Durkheim's thesis) and the phatic function (B. Malinowski's thesis), as well as reinforce cooperation and group cohesion (Heinrich's thesis) and in effect it may lead to the increased fitness of the group as an adaptive unit. Similarly, such theories of shamanic ritual as the psychodynamic theory (Weston La Barre<sup>14</sup>) and quasi neurobiological theories (E. Frecska, Z. Kulcsar,<sup>15</sup> M. Winkelman<sup>16</sup>) may be interpreted within the error management theory. From their perspective, thanks to such a ritual, the group undergoes

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<sup>12</sup> D.P. Johnson, *The Error of God: Error Management Theory, Religion, and the Evolution of Cooperation* [in:] *Games, Groups and the Global Good*, S.A. Levin (ed.), Berlin–New York 2009, p. 169.

<sup>13</sup> A. Stevens, J. Price, *Evolutionary Psychiatry: a New Beginning*, London–New York 2002, pp. 141–162.

<sup>14</sup> W. La Barre, *Hallucinogens and the Shamanic Origins of Religion* [in:] *Flesh of the gods*, P.T. Furst (ed.), London 1972, pp. 261–278.

<sup>15</sup> E. Frecska, Z. Kulcsar, *Social Bonding in the Modulation of the Physiology of Ritual Trance*, "Ethos" 1989, no. 17, pp. 70–87.

<sup>16</sup> M. Winkelman, *Shamanism. A Biopsychical Paradigm of Consciousness and Healing*, Santa Barbara 2010, pp. 183–230.

a collective catharsis, cleansing the group's members of subconscious emotional problems, and experiences a reduction in stress levels, which may be accompanied by hyper-activation of the endogenous opioid system with a potentially therapeutic character. From the point of view of these theories, the epistemic fallacy of hallucinations does not negatively impact their potential adaptive value in the scale of a species. Hallucinations as inadequate perceptions may have been cultivated for tens of millennia since their indirect subconscious effects and hidden functions, in the evolutionary scale, have resulted in the increased fitness of the species.

Obviously, these theories do not negate the cognitive value of the entire knowledge of archaic and traditional communities in the scope of their hunting and gathering activities, but merely try to somehow come to terms with the fact that their steering elites attributed a cognitive value to hallucinatory experiences which in light of the definition of the phenomenon of hallucinations had to be inadequate in cognitive terms. I am far from rejecting the above-described theories explaining the adaptive value of shamanism by its paradoxical power to cause positive evolutionary side-effects.

However, I seem to get an impression that the definition of a hallucination as "a percept, experienced by a waking individual, in the absence of an appropriate stimulus from the extracorporeal world" provided in Dirk's dictionary is too ambiguous and it *a priori* suggests that hallucinations are devoid of any cognitive value.

In my 1999 work *The use of Hallucinogenic Substances and Religion. Research Perspectives on Ritual and Symbolization* and in the monograph *Hallucinations and Visions from the perspective of the Research into Subliminal Perception and Synaesthesia* which I am currently working on, I advocate the need to revise the dominant manner for defining the notion of hallucinations and restoring them their cognitive value with a direct, as opposed to indirect, adaptive value. On the basis of the earlier-presented material and data being currently processed, I postulate to find that at least a part of the phenomena referred to as hallucinations should be recognised as cognitive representations of specific states occurring both in the internal and external environment of each individual. I deliberately use the wording "cognitive perceptive representations" instead of "symbols," since the notion of symbol, in itself monstrously ambiguous, should be reserved for universal representations transcending concrete individual experiences and semantically broader than representations of concrete internal and external experiences. Moreover, from the neurocomputative and Peirce's semiotic perspectives, all contents of an experience, as a result of neurophysiological processing are symbolic in relation to their basis. In relation to hallucinations as cognitively adequate, but specifically transformed representations of internal states, which Dirk's definition in principle passes over in silence, the auto-symbolisation theory of Austrian psychoanalyst Herberta Silberer concerning hypnagogic hallucinations may be successfully applied.<sup>17</sup> Silberer clearly demonstrates that contents of hallucinations may constitute a relatively straightforward pictorial representation of three aspects of internal experience.

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<sup>17</sup> H. Silberer, *Über die Symbolbildung und andere psychoanalytische Schriften*, Wien 1988, pp. 7–17.

1. Hallucinations may contain a given pictorially transformed content of current thought and imaginative processes. For example, a person under the influence of lysergic acid diethylamide is thinking of buying a concrete insurance policy – at the same moment a hallucination appears: the person finds himself/herself at a roulette table in a casino.
2. Hallucinations may represent as images the form in which thought and imaginative processes occur. For example: a person under the influence of lysergic acid diethylamide is repeatedly engaging in unsuccessful attempts to solve a specific mathematic problem – at the same moment a hallucination appears: the person is wandering through a labyrinth
3. Hallucinations may transmit in the form of images representations of somesthetic sensations. A person under the influence of lysergic acid diethylamide has a running nose and limited ability to breathe – at the same moment a hallucination appears: the person is travelling on board of a crowded lift.

These three modes of hallucinatory mapping may occur simultaneously. In each of the mentioned cases a relation occurs – that of an, in a way, adequate correspondence between the subject's internal state and its phenomenally perceived representation.

Analogically, in relation to hallucinations, it is possible to speak of their certain cognitive value as a representation in relation to the external world. This is indicated by the research into subliminal perception initiated in 1917 by Otto Pötzl.<sup>18</sup> Pötzl, and other researchers following in his footsteps – Charles Fisher, Howard Shevrin, Norman Dixon, Wolfgang Leuschner, Stephan Hau, and many others – demonstrated that images displayed subliminally with the duration time of 1/100 second, and therefore unnoticed by the subjects, upon certain transformations appeared as the content of their dreams. Pötzl also observed the occurrence of this phenomenon in the case of hallucinations accompanying alcoholic delirium. As early as in 1946, the Soviet research conducted by Leonid Wasiljew and his team demonstrated intensification of subliminal perception under the influence of mescaline and in the 1960s occurrence of a similar effect with the use of LSD was confirmed by an independent research by Samuel Friedman and Charles Fisher.<sup>19</sup> The presence of this effect is also confirmed by numerous observations made by Stanislav Grof. Subliminal stimuli show a tendency for manifesting not only in dreams, but also in various types of hallucinations. The above-mentioned studies suggest that the notion of hallucinations as inadequate perceptions, adopted from psychiatry and used in anthropological research must be revised. It should also take into account new directions for research, such as the influence of synaesthesia in the scope of subliminal stimulus processing, as well as the potential of lucid dreaming techniques in the scope of subliminal stimuli

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<sup>18</sup> O. Pötzl, *Experimentell erregte Traumbilder in ihren Beziehungen zum indirekten Sehen*, "Zeitschrift für die gesamte Neurologie und Psychiatrie" 1917, no. 37, pp. 278–349.

<sup>19</sup> L. Wasiljew, *Tajemnicze zjawiska psychiki człowieka*, przeł. J. Stobnicki, L. Stobnicki, Warszawa 1970, pp. 150–152; S.M. Friedman, Ch. Fisher, *Further Observations on Primary Modes of Perception*, "Journal of the American Psychoanalytic Association" 1960, no. 8, pp. 100–129.



deciphering. Such a revision will facilitate a more complete evaluation of the adaptive value of shamanism in the prehistory of the humankind.

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