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From Pleistocene art to the worship of the mountains in China. Methodological tools for Mimesis in Paleoart

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Abstract

Bednarik (2009) described the Makapansgat jasperite cobble, a stone shaped as a human face deposited 2.5 to 3 million years ago. Tsao et al. (2006) demonstrated that face perception is a crucial skill to primates, humans and macaque monkeys. Applying two methodological tools of the Entorno Archaeology - Psychological and Geographical Entorno-, may allow to understand the process that probably led Pleistocene humans to regard as sacred rocks -Mimetoliths- and objects -Mimetomorphs- with natural forms that resembled animals or human beings, in increasing scale, from small rocks, big rocks, mountains and Mountainous ranges, in the early Chinese culture, where we have found that three mythological characters: Pan-Gu (盘古), Fu-Xi (伏羲) and Shen-Nong (神农), probably were sacred mountains.

Mimesis, by the psychological phenomena of Pareidolia, Apophenia and Hierophany (The PAH triad), might explain the many instances when humans between Pleistocene and early Chinese culture attributed religious significance or extraordinary connections to ordinary imagery and subjects. On the other hand, Mimetoliths and Mimetomorphs might contribute to explain the origins of Palaeoart, animism and religion.

***Key words**: Palaeoart; Mimesis; Pareidolia; Apophenia; Hierophany.*

To understand the phenomena and processes that took place during the Pleistocene era, we must open up our perspective in order to acknowledge what happened before and after.

This paper analyzes the influence of three psychological phenomena inherent to all human beings: Pareidolia, Apophenia and Hierophany (PAH Triad) (Bustamante 2008) in the recognition of Mimetoliths and Mimetomorphs, in the period between 3 millions in the past and the formative period of the Chinese culture. Also examines modern cases.

The PAH triad does not explain 'spiritual' matters, but digs into the formulation of images by means of our senses. While studying objects, geographic features, sounds and signs in the surroundings of a specific area, it comes useful to ask ourselves "What does it look like?". In this article we will only study visual phenomena.

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1. Concept Definitions

Pareidolia (psychological phenomenon): involving a vague and random stimulus (often an image or sound) being perceived as significant. Psychological phenomenon related to the Rorschach test.

Apophenia (psychological phenomenon): that describe the experience of seeing patterns or connections in random or meaningless data. The term was coined by Klaus Conrad (1958).

Hierophany (psychological phenomenon): the perception of a manifestation of the sacred.

PAH Triad (psychological phenomenona): Pareidolia-Apophenia-Hierophany working simultaneously, is changeable among diverse individuals. The PAH triad is part of the unconscious mechanisms inherent to every human being, present in the primary stages of the early development of the human conscience.

Mimetolith (M): *"a natural topographic feature or rock which natural shape resembles something else –human, animal, plant, manufactured item, or part(s) thereof."* (Dietrich 1989)

Mimetomorph (Mm): Any kind of material (bones, wood, mud and others) with natural shapes that resembled animals, human beings or other objects. Many of these materials do not survive passage of the time.

Mimetolith Modified (M-m): Natural shape altered by human beings.

Mimetomorph Modified (Mm-m): Natural shape altered by human beings.

Entorno's (surrounding) archaeology: Moyano & Bustamante (2010) provides entrees to link cultural, geographical, climatic, biotical, astronomical, atmospheric and psychological information from ethno-archaeological data in a small, medium and large scale. It strengthens the concepts of Landscape archaeology – see Bradley (2000) and the Xi'An Declaration on the Conservation of the Setting of Heritage Structures, Sites and Areas <http://www.international.icomos.org/xian2005/xian-declaration.htm>.

2. Methodology

- Analysis of the evidence from the perspective of the PAH triad and Entorno (surrounding) archaeology.
- Visual examination of Mimetoliths and Mimetomorphs found in archaeological contexts.
- Analysis of Mimetoliths and Mimetomorphs based on PAH triad.

3. Materials

- Quoted bibliographical sources.
- Regarding this article, the information contained in it come from web sites properly checked i.e. considered as equivalent to personal communication. The last consultation date of the cited pages is May 2010.

4. Objectives

- Analyze archaeological evidence in order to understand the evolution between 3 million years BP to the early Chinese culture.
- Identify the possible influence of the PAH Triad and Mimetoliths recognition in the origin of paleoart, animism and religion.

5. Examples sorted by date

Following this, we present a small selection of Mimetoliths and Mimetomorphs from 3 million years BP to 2,000 years BP. Each object represents a period and not a specific date. The available examples are numerous, and due to length restrictions, it is not possible to present more.

• **Makapansgat**, 3 millions of years BP: The Makapansgat pebble, which had such effective iconic properties that it was noticed by hominids up to 3 million years ago (Bednarik 2008).

• **Groß Pampau, GR**, c. 500,000 BP: Pampbird3, Identified as 'bird with fossil inclusion' by Ursel Benekendorff.

<http://www.originsnet.org/pampau5gallery/pages/j%29pampbird3.htm>

• **Bhimbetka India,** 500,000-200,000 BP: Bhimbetka, Auditorium Cave, Madhya Pradesh: Acheulian Petroglyph Site.

<http://www.originsnet.org/bimb1gallery/pages/p%29%20bmbcracct.htm>

• **Tan-Tan Venus, Morocco,** 500,000 to 300,000 BP: Figurine from Tan-Tan, Southern Morocco, a modified manuport from a Middle Acheulian layer (Bednarik 2006).

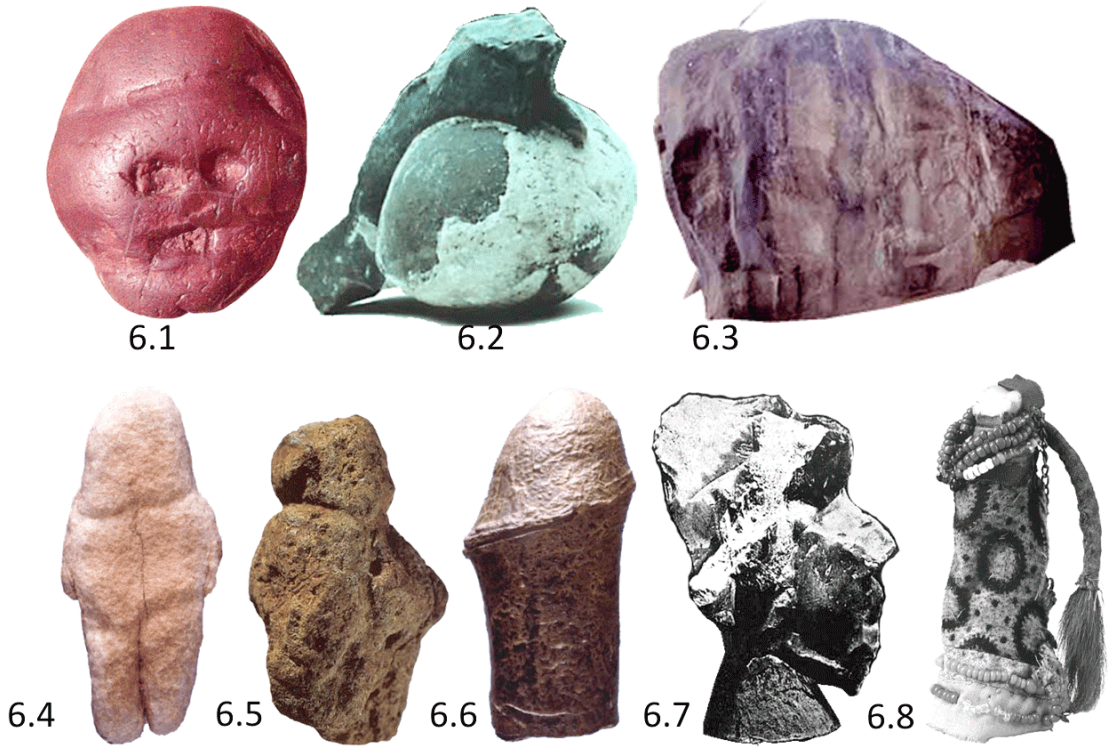

Fig. 1. Mimetoliths and Mimetomorph.

• **Berekhat Ram, Female figurine, Israel,** 470,000 to 230,000 BP: Basaltic tuff pebble containing scoria clasts excavated in an Acheulian occupation layer at Berekhat Ram, Golan Heights (Bednarik (2006).

• **Erfoud, Morocco,** Late Acheulian, 200 000 to 300 000 BP: Fossilized fragment of a cuttlefish cast that has the distinct shape and size of a human penis (Bednarik 2006).

• **Hamburg-Wittenbergen** c. 200,000 BP: Heads / h) hwhdwhat, "*40.1. Kopf mit Kappe von Wittenbergen. Nr. 3,1.*"

<http://www.originsnet.org/hambwitt2gallery/pages/h%29hwhdwhat.htm>

• **Katonga River basin**, Paleolithic: A phalangeal "doll" from the Yenisey Uezd District, Yenisey Governate/Province in central Siberia, 11 cm. Beads, cloth and a reindeer phalange (Caldwell 2009).

• **Three Chinese gods:** Three mythological characters described as possible sacred elements of the natural landscape in the origin of all belonging to the formative period of the Chinese culture (Bustamante *et a*l 2010):

– Fu Hsi (伏羲)**:** mythological emperor*,* a culture hero invented writing, fishing, and trapping. Possibly originated from a mountain (Fig. 2a).

– Shen Nong (神农)**:** a mythological emperor established a stable agricultural society in China. Possibly originated from a mountain (Fig. 2b).

– **Pan Gu** (盘古),: A central figure in Taoist legends of creation. After death his body became the five sacred mountains of China (Fig. 2c),

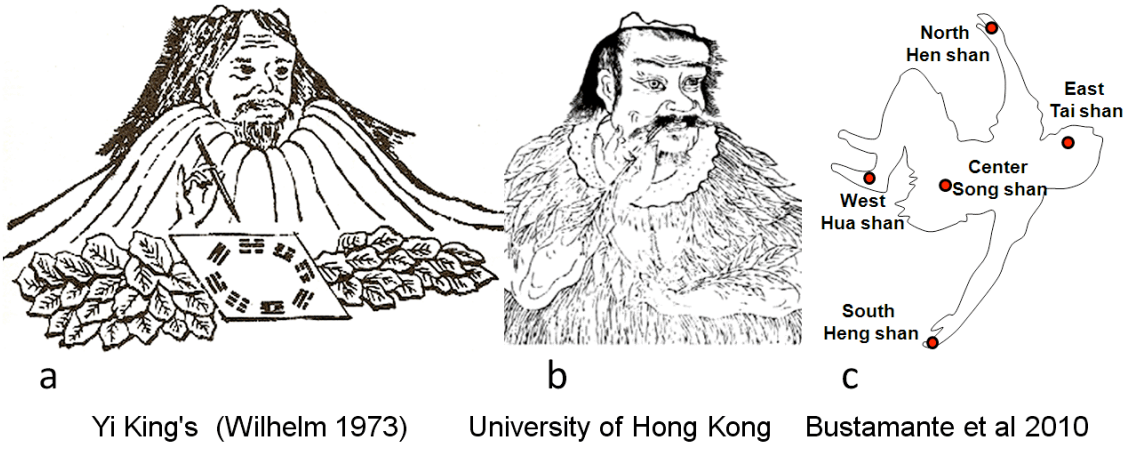

Fig. 2. Three Chinese Mimetoliths.

6. Discussion

6.1. From the smallest and simple to the biggest and complex

Makapansgat: Mimetolith (M). The earliest evidence of the phenomenon known as pareidolia. If pareidolia allows to explain the origins of art, this mimetolith dates it to a range of 2.5 to 3 million years BP.

Groß Pampau: Mimetolith (M). Findings from this period (500,000 years BP) may be considered as early manifestations of symbolic thought. The first expressions of apophenia (to relate this rock with a bird and as a symbol of communication with heaven) and hierophany (perception of the phenomenon as numinous) are probably linked to this period. Guimaraes say:

"Selective activity precedes and prepares the production of graphic marks, symbols and patterns. A process that, according to Bednarik, will later result on to the invention of art. From 'reading' to 'writing' perceptual-symbolic patterns in reality". <http://arthistorypart1.blogspot.com/2007/11/proto-art-and-paleo-art.html>.

Pareidolia can explain that process.

Bimbetka elephant: Mimetolith modified (M-m). tentative Interpretation of James Harrod suggests that the Acheulian artisans who placed the cupules on Chief's Rock may have seen the rock as a figuration of one or even two elephants. This would have happened about 500,000 years BP (Tilley 1994).

Berekhat Ram: example of Mimetolith modified (M-m). Back in this period, our ancestors had the ability to recognize a human shape on mimetoliths, probably relate it to a 'superior' being and alter it to enhance the resemblance. This may be considered as a prehistoric referent of the psychological origins of art.

Tan-Tan Venus: Mimetolith modified (M-m). The figurine bears microscopic traces of a red pigment, which is currently the earliest evidence of applied coloring material. This case is similar to the previous one.

Katonga River basin: Mimetomorph modified (Mm-m). According to Caldwell (2009) *"The use of phalangeal figurines from central Siberia to Greenland also suggests that the practice spread around the Arctic from ancient sources."* Mimetomorphs can be made out of biodegradable materials (bone, wood, textiles) therefore the number of objects found may be considerably less than the number that actually existed.

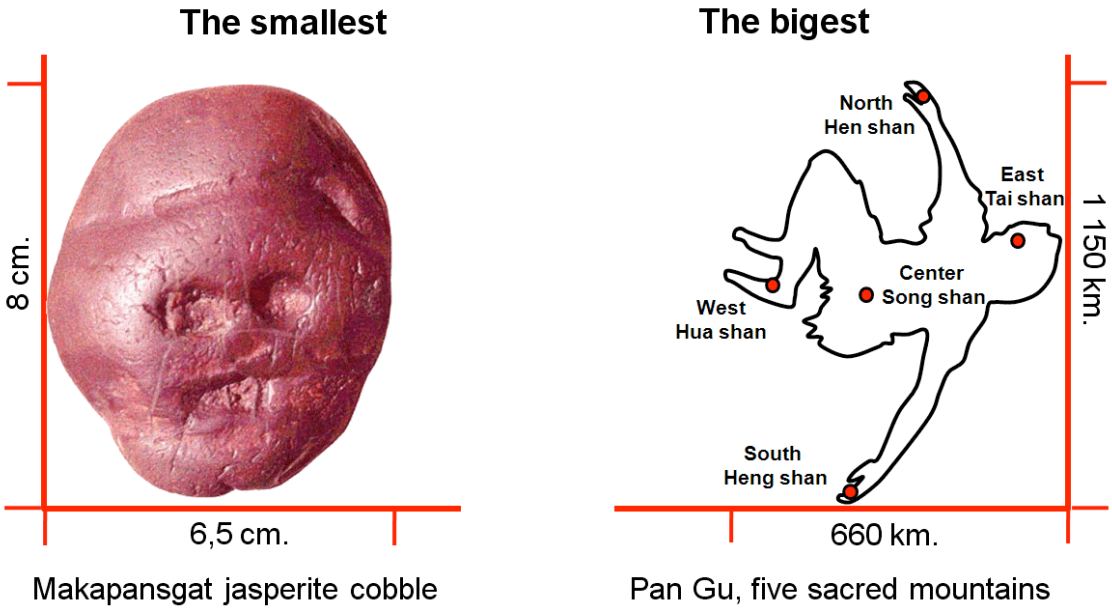

Fig. 3. Mimetolith: **a.** Makapansgat, the smallest; **b.** Pan Gu, the bigest.

China. Fu Xi, Shen Nong, Pan Gu: Mimetoliths (M). Shows documented cases of sacred mountains. Big scale mimetoliths show the up scaling complexity of the phenomenon. Pan Gu is the greatest Mimetolith found at present, 1,150km x 660km.

Pareidolia may be the detonator for the development of apophenia and hierophany, and after these two, religion. Evidence indicates that this process was begun at least 2.5 to 3 million years ago. Future findings will allow to complete the sequence and determine in a more precise way the earliest manifestation of each phenomenon.

How many mimetoliths or mimetomorphs might have been discarded in diverse archaeological sites? Now that we are able to identify them it is possible that in the future we will find some dated further back in time.

6.2. Mimetoliths and the evolution of the human brain

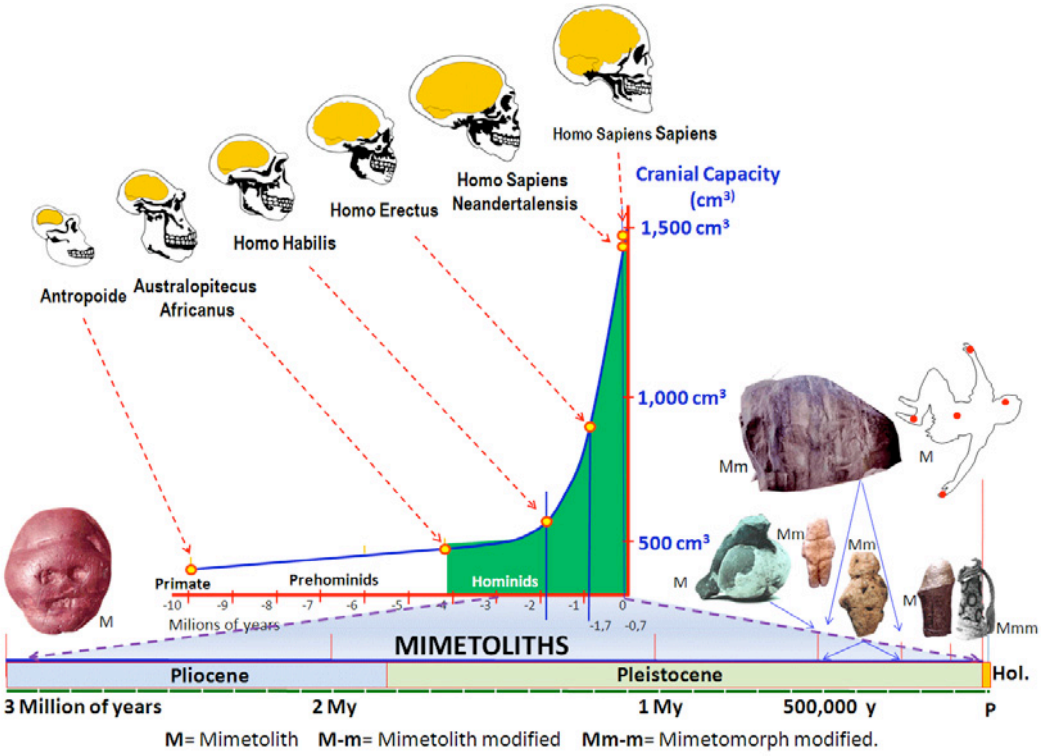

Fig. 4. Human brain evolution Mimetoliths and Mimetomorphs.

The ability to recognize mimetoliths has manifested progressively since the early stages of the development of the human brain, as is exemplified in the following image. Examples of pareidolia in animals suggest that this process may have started earlier in the development of brain.

6.3. Animals and Pareidolia

The effects of pareidolia appear to have influenced not only human beings, but also animals. Here we present five examples of this:

"We and other animals all are predisposed, then, to see ambiguous phenomena as alive. In our case, we also are disposed to see them as humanlike. Occasionally we are right, and these instances justify the strategy. Often we are mistaken, and if we later see this, we call the mistakes animism or anthropomorphism." (Guthrie 2001)

Five examples:

• **ant-mimicking spider:** *Aphantochilus rogersi* is an ant-mimicking spider that preys exclusively on cephalotine ants (Castanho & Oliveira 1997).

• **frog and sea urchins:**

"Just as frogs are prone to see moving dots on a screen as flies, and sea urchins will avoid any dark shadow as if it were an enemy fish, humans too tend to interpret their environment with the 'models generated by their most pressing interests'." (Guthrie 1996: 418, 2002: 54, cited by Westh 2009)

• **Indo-Malayan octopus:**

"We observed nine individuals of this species displaying a repertoire of postures and body patterns, several of which are clearly impersonations of venomous animals co-occurring in this habitat […] *Additionally, our observations suggest that the octopus makes decisions about the most appropriate form of mimicry to use, allowing it to enhance further the benefits of mimicking toxic models by employing mimicry according to the nature of perceived threats."* (Norman *et al.* 2001)

Figure 5 shows two different shapes adopted by this octopus.

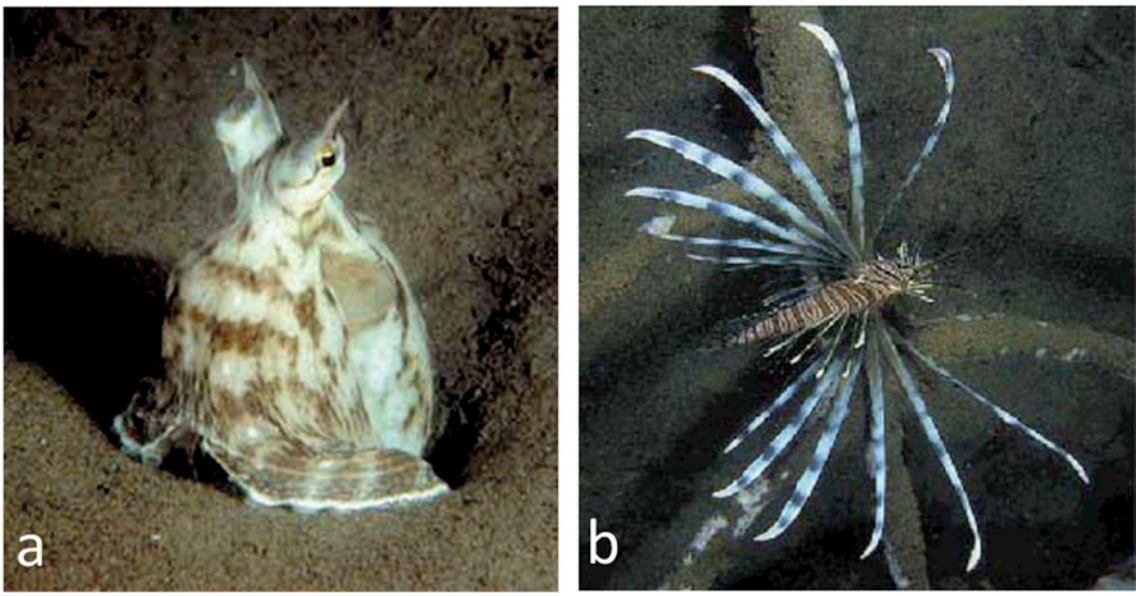

Fig. 5. Mimic octopus: **a.** sentinel state in mouth of burrow; **b.** lion-fish model *(Pterois sp.)*.

• **monkeys and Pareidolia:**

"Face perception is a skill crucial to primates […] *Almost all (97%) of the visually responsive neurons in this region were strongly face selective, indicating that a dedicated cortical area exists to support face processing in the macaque."* (Tsao *et al.* 2006)

In their conclusions they say "Why is it important that the brain contains an area consisting entirely of face-selective cells? First, this indicates that the brain uses a specialized region to process faces"… This indicates that our primate ancestors were in conditions of recognizing mimetoliths.

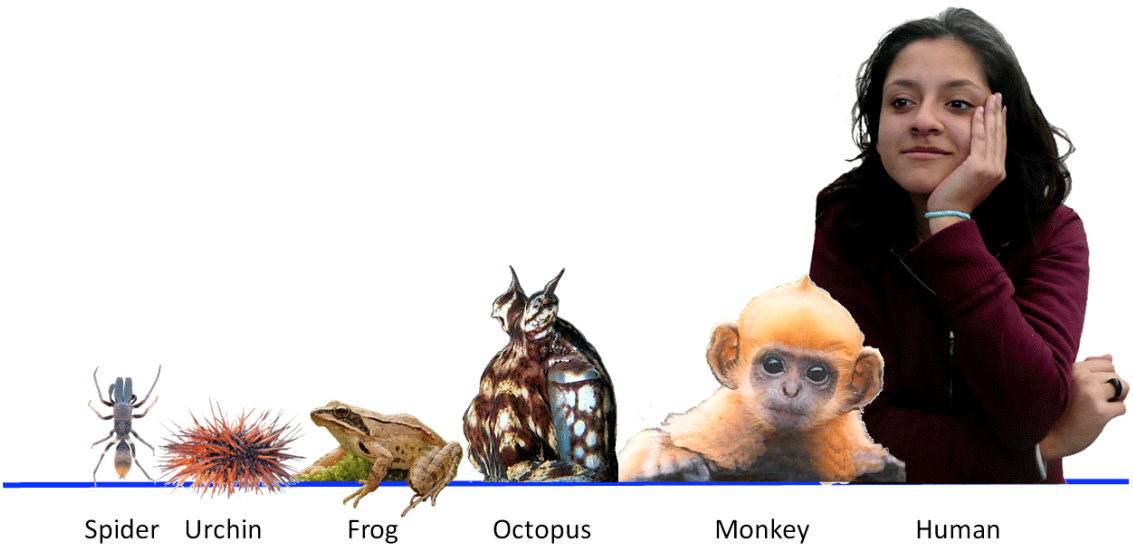

Fig. 6. Animals and Pareidolia.

6.4. Mimesis and Pareidolia

Pareidolia does not depend on the size of the brain. How to explain a) perceptual errors (false recognition), b) the mimicking (to resemble closely; simulate), c) camouflage (concealment by some means that alters or obscures the appearance). Figure 7 compares the sizes of a human brain with the brains of a monkey and a frog.

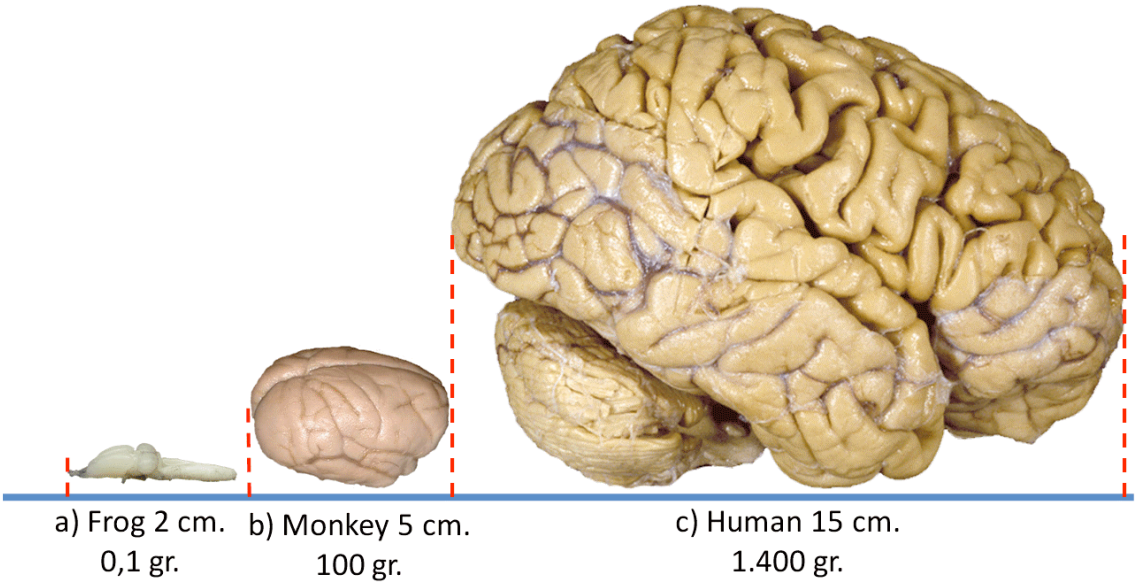

Fig. 7. Compared brains.

There are no specific studies about pareidolia on animals, but, it is possible to conclude, based on circumstantial evidence, that a high percentage of animals may use it to recognize their predators, preys or others, as a survival mechanism.

6.5. The language of nature

Probably, human beings tried to decipher the "language of nature" from the beginning. Thanks to Pareidolia, it seems that they read the cosmos, the sky and the land as if they were a gigantic Rorschach test that allowed them to see figures in the sky and the land.

By means of apophenia and hierophany, those figures were interpreted according to their context and to what they seemed to suggest, always coming up with a coherent explanation in relation to the happenings and observed events.

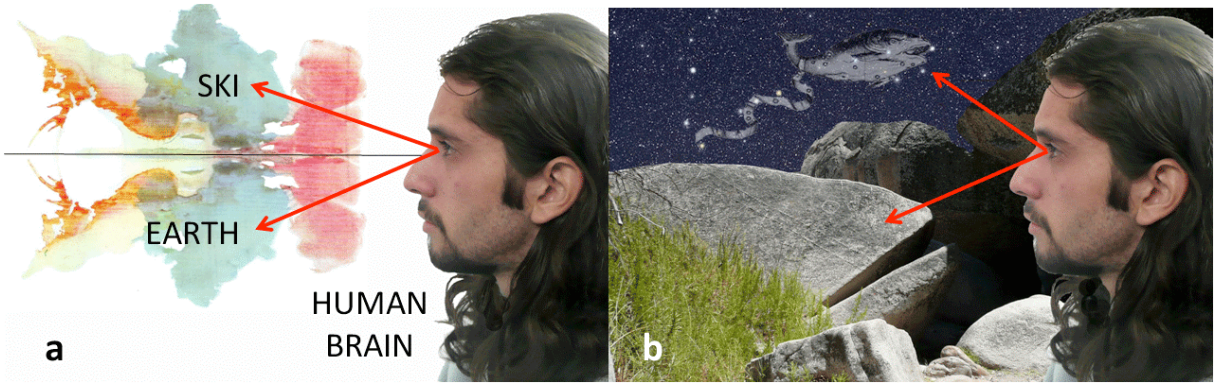

Fig. 8. Mechanism of exploration and understanding of the Cosmos.

Figure 8 explains the process: a) the observer explored the signs in the sky and the land as if they were a Rorschach test. The human brain is the "most existing complex computer"; b) when an apparent figure appeared on the land a similar one did on the sky. It must have been a specialist's task, probably for shamans, to establish intricate relations and discover the different cycles of nature (the 4 seasons, length of the year, and others).

Legends probably arose as a record of the diverse phenomena observed and the relations linking them, elaborating stories that contained the keys to recognize this phenomenon. The key to understand these events and compose these tales was to identify common components (constellations for example) connecting unknown occurrences with well known objects and characters. By doing that, it was easier to individually remember them, set up categories and connections and eventually recognize changes in a certain period of time.

Possibly, whoever had this special ability turned into the interpreters of "God's plans", with a special knowledge of the sacred and a particular power over the sky, the land and the rest of men. This, eventually, may have led to the origin of structured religions.

According to Rubia (2005) *"the biological adaptation has nothing to do with copying reality; to adapt means to find possibilities and means to overcome resistances and obstacles in the experienced world."* The PAH triad empirically explains the way this process took place.

6.6. Fertility cult, Apophenia and Hierophanía

If there is a cult devoted to a certain object associated to natural events, we are in a position to affirm that we are in the presence of Apophenia and Hierophany. About

the Palaeolithic figurative art of Eastern Europe and Siberia, Poikalainen (2001) in the conclusion says:

"The most evenly represented motif in the area under discussion is female figurines or the sc. Palaeolithic Venus figures. Their largest scale distribution and detailed elaboration reflects how the worldview of a Pleistocene man was connected to the fertility cult. Some paintings discovered in the Ignatievka cave also refer to the fertility cult."

6.7. The origins of art

Leon Battista Alberti (1464), in his treatise *De Statua,* describes the mode in which he thinks sculpture begun:

"I believe that arts that aspire to imitate the creations of nature were originated according to the following scheme: on the trunk of a tree, a cloud of earth, or on any other thing, were accidentally discovered one day certain contours that needed only a few retouches to notably look like a natural object. Focusing on that, men examined if it was possible, by means of addition and subtraction, to complete what was missing to achieve the perfect resemblance. Thus, by adjusting and removing features according to the scheme required by the object itself, men succeeded in what they intended to do, and not without pleasure. From that day on, men's ability to create images was growing until they knew how to form any kind of resemblance, even when the material did not present outlines that guided the labour." (cited by Gombrich 1959)

Pareidolia supplies an adequate explanation for this process.

6.8. Models of explanation of early manifestations

Following a non-exhaustive brief synthesis of some models used to explain the origins of art, animism and religious manifestations.

J.D. Lewis-Williams & T.A. Dowson (1988) in their article "The Signs of All Times" propose the Origin of Art in Entoptic Phenomena in the Upper Palaeolithic by which we can gain an insight into the nature of the origins of art. Guthrie (1993) explains religion as systematic anthropomorphism. According to Clottes (2003) our Cro-Magnons ancestors were exactly like us: our direct lineage begins in Africa, at least 150,000 years ago; altered states of consciousness are an intrinsic component of the human neuropsychological background. Vitalino (2007) associates myths and geographic formations (geomythology), describing myths and the relation with mythology, but fails to make a deeper study of the psychological phenomenon that justifies it. Helvenston & Hodgson (2010) base their interpretation on neurophysiology.

The PAH triad offers an adequate theoretical model that allows us to explain this phenomenon. It clarifies the origin of paleoart, its relation to animism and the possible origin of shamanism and religion, based on psychological mechanisms inherent to human beings, making unnecessary altered states of consciousness, but maybe favored by them. "Religious ecstasy is the extraordinary, not typical response." (Whitley 2009: 195)

The PAH triad as a methodology has multiple scopes, from the study of paleoart to the development of methods to study cultural astronomy.

6.9. The origin of symbols

The PAH triad may explain the origins of sacred art. Acording to Whitley:

"Borrowing again from native America, despite the potential inferential hazards in doing so. I recognize that in shamanistic cultures, painting and engravings are material objects first and foremost, before they are signs or symbols. They exist because not someone placed then there, but simply because they are there as physical entities in their own right. In native American eyes, they have a life and an agency of their own, with or without human involvement. Indeed in many native American cultures human creation of the art is consistently denied." (Whitley 2009: 178)

At some point, natural shapes (mimetoliths- mimetomorphs) might have triggered the shapes created by humans *"transforming the given into the created"* (Whitley 2009: 48), but, the natural forms continued being valued through time, most likely as "divine creations" or with an intrinsic power.

Modern aniconic cultures (Islamism, Judaism…) still consider certain symbolic figures, sites or rocks and others as sacred (Bustamante 2008b). This indicates that natural tendencies are strong and with deep psychological roots.

6.10. What does it look like?

Archaeological studies only show a drawing (petroglyph) but fail to assign any value to the surroundings. It is precisely in those where traces of the PAH triad are found.

When we first learned to consider the appearance of the surroundings, meaning mass, lights and shadows on rock formations and mountains, we found the relations that led us to look for an explanation based on psychological mechanisms and the rules of perception (Bustamante 2004, 2005a, 2005b, 2005c, 2006a).

The question "What does it look like?" is currently oriented towards the search for mimetoliths and mimetomorphs when we observe an object or event in an archaeological context (Bustamante 2008a). This change in the question and therefore in the validation criteria is coherent with what was indicated by Maturana (2006).

6.11. Euhemerism the origin of the gods

In the West, the search for a rational explanation, based on actual facts, beings or objects for the origin of the gods, finds its source in Euhemerus, a Sicilian Philosopher about 300-260 BC. His method of rationalization is known as "Euhemerism", cited by Diodorus (1970), that treats mythological accounts as a reflection of actual historical events shaped by retelling and traditional mores.

PAH shows the mechanisms that transformed certain celestial elements, natural event, features in the landscape and others into gods. This explains what Hume indicates:

"We find human faces in the moon, armies in the clouds; and by a natural propensity […] *ascribe malice or good-will to everything that hurts or pleases us. Hence* […] *trees, mountains and streams are personified, and the inanimate parts of nature acquire sentiment and passion."* (David Hume, Natural History of Religion, p. 29, cited by Gutrie 2001)

6.12. The Legend of Pirene

According to the Legend:

"Pyrene is the nymph of classical mythology who gave its name to the Pyrenees. The legend attempts to explain how a mountain range that was worshipped as a god by the early inhabitants came to be. Heracles, (Hercules) deeply moved by Pyrene's tragic ending burned by the fire of Gerion, erected a mausoleum over her dead body, by piling up all the stones and rocks he could find, thus creating a great mountain range that he called the Pyrenees in memory of Pyrene."

<http://www.caiaragon.com/en/arbol/index.asp?idNodo=119&idNodoP=38>

Fig. 9. The Pyrenees as the body of Pirene.

The Pyrenees provide an example of the PAH triad in the geographic surroundings of this congress. The mimetolith of Pirene has a total length of 400km. Gerión was the founder of Gerona and the surrounding area of Garrocha, a volcanic region (Pallí i Buxó & Pujadas 1999). The last eruption dates back to around 9,500 BP. This may explain the fire in the legend.

6.13. Modern PAH

The PAH triad still applies to modern discoveries, not only among common people, but with world class scientists. It is a useful tool to explore the world, but the religious and emotional connotations have changed. The following examples show how this method is unconsciously applied in science to-day:

6.13.1. Astronomy, cosmic hand

NASA inform in the article A Young Pulsar Shows Its Hand, (04.03.09):

"At the center of this image made by NASA's Chandra X-ray Observatory is a very young and powerful pulsar, known as PSR B1509-58, or B1509 for short. The pulsar is a rapidly spinning neutron star which is spewing energy out into the space around it to create complex and intriguing structures, including one that resembles a large cosmic hand."

<http://www.nasa.gov/mission_pages/chandra/multimedia/photo09-025.html>
(*cf.* Moyano & Bustamante 2010, Fig. 6).

6.13.2. Medicine, hummingbird in brain

Maranhão-Filho & Vincent (2009) say in the Conclusion:

"Various imaging techniques have developed largely as useful diagnostic tools in modern medicine. Facing a multitude of contrasts and forms, our brains naturally react trying to find familiar patterns matching typical aspects of a certain disorder. This process is similar to finding visual patterns in shadows and clouds, i.e. pareidolia. In terms of neuroimaging, some disorders may present aspects that evoke animals and suggest pareidolic denominations. Such visual illusions help memorization and improve general diagnostic skills."

<http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0004-282X2009000600033&lng=en&nrm=iso&tlng=en>

6.13.3. Ecology, the face of mother nature

"Marine photographer and environmental lecturer Michael Nolan captured the pictures while on an annual voyage to observe the largest icecap in Norway Austfonna on July 16 [… describes it as …] *'Tears' in the natural sculpture were created by a waterfall of glacial water falling from one of the face's 'eyes'."* (Gray 2009)
<http://www.telegraph.co.uk/earth/earthnews/6127552/Icecap-photo-shows-mother-nature-in-tears.html>

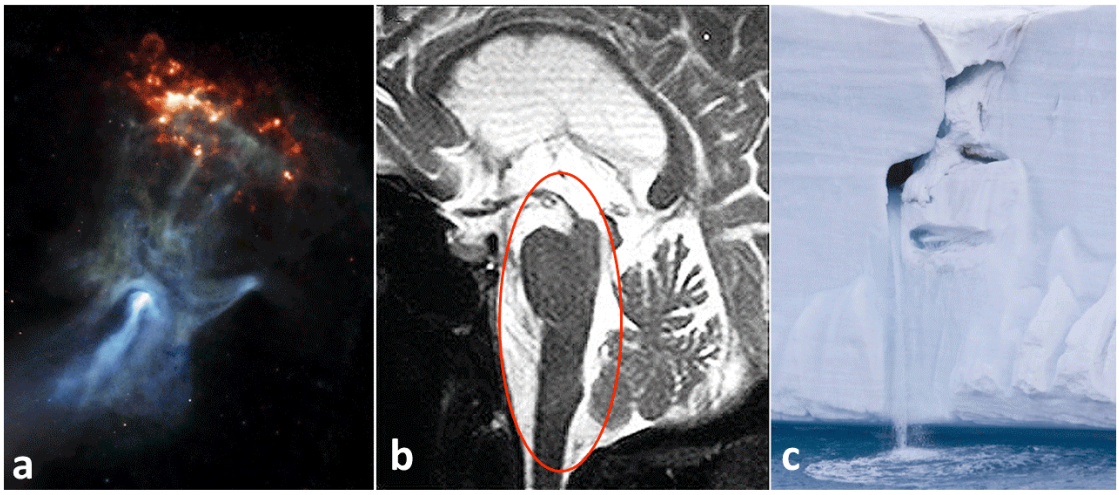

Fig. 10. a. Astronomy, NASA, the hand of god; **b.** Medicine, The hummingbird flying in the brain (red circle); **c.** Mother Nature on Ice.

6.14. PAH as a global phenomena

During field work, using methods that were non aggressive to the site (meaning without major interventions or disruptions such as digging), we found this phenomena in pre-Columbian cultures first in Chile (Choapa region), Peru, Bolivia and Mexico. Later, we found in the specialized literature traces of this coming from the five continents and from all periods of history. Then the PAH triads appears to be a ubiquitous phenomena (Bustamante 2008b).

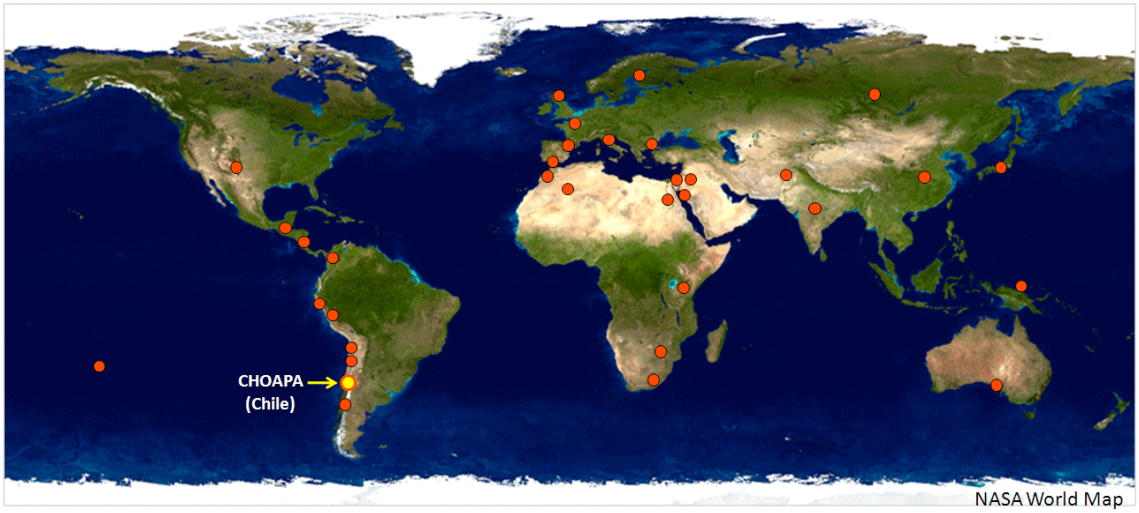

Fig. 11. Probable ubiquity of the phenomenon. Each red dot represent a site where we found PAH.

Conclusions

Pareidolia: it provides a way to be related to the world, to interpret cosmics signs visualizing the sky and the land as if they were a gigantic Rorschach test, contributing to the origin of Paleoart, being the Makapansgat cobble its earliest manifestation, and the Mimetolith of Pan Gu the latest and most complex (in relation to the period studied in this article).

The implications of Pareidolia include all five senses in the formulation of images. This can be observed in both humans and animals. As a result of this process in humans, we found gods that arose from the combination of these images and human emotions.

The examples of pareidolia in animals indicate that it might be a phenomenon inherent to living creatures, independent of their cerebral development.

Apophenia: it allows establishing relations between different beings, things uncertain events, phenomena and others not directly related. When the observer finds significant matches, a **Hierophany** is produced, meaning, a feeling that what was observed is linked to sacred matters.

The PAH Triad: A) it provides a theory-perceptual frame that does not depend on altered states of consciousness. It allows explaining in part the emergence of animism, religion and art, by means of psychological phenomena inherent to all human beings, from any period of history. B) it appears to be a ubiquitous phenomena. C) It might be a precedent of science.

What does it look like?: This question applied to archaeological contexts, permits a change in the paradigm, work methodologies and validation techniques.

Mimetoliths and Mimetomorphs: Seem to detonate the work of the PAH triad.

Archaeology of the Entorno (Surroundings)**:** Supplies a method to relate data from diverse fields such as culture, geography, climatology, astronomy, psychology and biology among others.

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