MINISTRY OF NATIONAL EDUCATION "1 DECEMBRIE 1918" UNIVERSITY OF ALBA IULIA FACULTY OF HISTORY AND PHILOLOGY FIELD OF HISTORY

SUMMARY THESIS

Contributions to the study of anthropometry in prehistoric and ancient visual creation, between science and art



- Introduction to comparative anthropometry -

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Chapter 1. Introduction

As in history, in the life of every human being the body exists before reason. Before being capable of understanding, Man used his body for understanding. This is what happened with the first *homo sapiens*, who began to know and recognize the world around by eyeing everything up-and-down. Perhaps such nostalgia sometimes ignites the temptation of researchers' to re-evaluate the body's archetypal nature: that *artefact-body*, waiting passively in the depths of Earth and museum shelves alike: that *Earth-body*, blown in by the Spirit of Genesis, bestowed by the Creator, but equally so by eschatology: that *message-body*, sent into outer space and time in search for dialogue and conversation; that *Eden-like body*, mystified by profound words yet clad in philistine words; that *paradox-body*, at times worshipped to ecstasy, at other times stigmatized by its own form; and finally, that *"golden" body*, uncorroded with indifference and oblivion.

From an archeological or more specifically, an archeometric point of view, this thesis sets out to propose a new examination method of anthropomorphic representations, from an anthropometric perspective adapted to the primary visual perception that is aimed towards a better historical and anthropological understanding of ancestral times.

We hold no claim to a totally original vision regarding the interdisciplinary nature of the suggested theme; on the contrary, we wish to point out that such an approach has naturally come to be a prerequisite of modern research. One of the most important studies on this subject belongs to Douglass W. Bailey, Prehistoric Figurines¹, in which a new term with a particular meaning, "corporeality", appears in its very subtitle: ("Representation and corporeality in the Neolithic

¹Bailey W. Douglass, *Prehistoric Figurines*, Routledge, London and New York, 2005.

age). The present study starts specifically from Man's fundamental analogies, from the similarities of "corporeality" regarding the psychic and physical structure of *presentation* and *representation*. Contemporary primitive man is so much like his prehistoric fellow, both anatomically and through the perception of his own identity, this being the premise of the method under examination. This is not about any anachronic application of a modern theoretical model, inadequate for paleo-anthropological research, it is rather about the interpretation of anthropomorphous figurines as first signs of communication, hardly any of which are randomly connected to corporeal reality. We are thus apt to eschew empirical, metrological research that accounts in no way for the existence and role of prehistoric figurines.

It is our understanding that the first measurements and their public transmission were possible by means of an anthropometric *average*. The foot, elbow, palm and hand's length have been to this day retained as measurement units as has happened with other human thoughts and feelings; the Paleolitic and Neolithic figurines contain "encrypted" anthropometric messages as well, that need analogous interpreting.

"For the modern consciousness, any physiological act such as eating and sexuality, is nothing but an organic process, albeit burdened by a series of taboos" (commonsensical rules during meals; limits imposed by "morals" on sexual behaviour). To the primitive man however, such an act is never simply physiological it is, or may become a "secret", a "participation to the sacred". The cause and effect of the first *Weltanschauung* gesture was man's own body. Through its anthropomorphous contour, alive or modelled, all thoughts, emotions and actions have flashed in and out. *This was the stage of anthropometric transfer from subject to object*.

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² Mircea Eliade, Sacrul și profanul, Ed. Humanitas, București, 1995, p.16.

Tools, vases, arms, jewels, as well as dwellings and constructions, from caves to pyramids, all bear the mark of anthropometric proportion, included in a semiotic register that ranges between profane and sacred

When Pythagoras said: "In the beginning there was the Number" he was referring to the universal order governed by mathematical laws, the knowledge of which allows us to understand the world's geometric and numerical harmony. Five centuries later, the evangelical maxim: "In the beginning there was the Word" may be interpreted as an reappropriation of the same concept, as in Hebrew, numbers are represented by letters, so each word corresponds to a certain numeric value. In other words, both the number and the word were understood as expressions of the logos that is, of the divine will³.

In Pythagorean mathematics, the logos presupposes a "qualitative" relation between numbers that explains the transcendental essence of the world, well beyond the quantitative reasoning of any geometric or arithmetic speculation. Euclid managed to retain this relation in his theory of ratio and proportion. "The ratio represents the qualitative relation in what regards the dimension between two homogeneous magnitudes. The Proportion (analogy) represents the ratios equivalence"⁴.

Euclid defined *the extreme and mean ratio* around the year 300 B.C. However, **Dorifor's** statue created by **Policlet**, considered the golden ratio canon, was sculpted well over a century later and so were the statues of the famous Phidias, who lived between 490 and 430 B.C. In his memory, the American mathematician Mark Barr gave the *golden ratio* the name of *phi* (φ) , "as many art historians have held

³ H.R.Radian, Cartea proportiilor, Ed. Meridiane, București, 1981, p.8.

⁴ Matila C. Ghyka, *Estetica și teoria artei*, Ed. Științifică și Enciclopedică, București, 1981, p.30.

that Phidias made minute and frequent use of the *Golden Section* in his sculpture"⁵.

During the 5th century B.C., Pythagoras' peers were terrified by the incommensurability of *the golden number*, considering it "a sort of cosmic error, a piece of information that must be suppressed and kept secret".

The extension of the hypothesis, according to which the golden section was applied in arts language before its abstract formulation in mathematical language, represents the very basis of this thesis. Just as the ancient Greek sculptors used the aesthetic harmony of the extreme and mean ratio before this truth was acknowledged as a geometric concept, so we can say, by magnifying the temporal delay, that the golden ratio was applied by pre- and proto-historic artisans based on a special feeling for the beautiful, beyond any convention or mathematical demonstration. "Some authors speak about a certain instinct for the golden number that not only artists, but any human being had". Latest research has shown that the natural analogy and intuition for the golden section belong to the Lower Paleolithic, which practically means that the "genesis" of φ would coincide with anthropogenesis⁸. The bone structure of the human hand reflects the golden ratio, the first stone tools taking over, by analogy, the anthropometric print. The examination of several tools belonging to the Auchelean culture confirms this hypothesis, according to which homo erectus may be deemed as the first beneficiary of this breakthrough.

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⁵ Mario Livio, *Secțiunea de aur*, Ed. Humanitas, București, 2007, p.14.

⁶ *Ibidem*, p.13.

⁷ Solomon Marcus, *Artă și Știință*, Ed. Eminescu, București, 1986, p.47.

⁸ Feliks, J., Phi in the Acheulian: *Lower Palaeolithic intuition and the natural origins of analogy*, Bednarik, R. G. and D. Hodgson (Eds.), *Pleistocene palaeoart of the world*, British Archaeological Reports International Series 1804, Oxford, 2008, pp.11–31.

In the third book of *De Architectura*, chapter 1, Vitruvius explains the meaning of the word *proportio*, as the equivalent of the Greek term αναλογια (analogy). Nowadays, both words have semantically evolved in different ways. We notice that the *proportion* has a precise meaning, of mathematical equality, whereas *analogy* is solely conditioned by a relative resemblance, a similitude.

At the beginning of the 19th century, the Swiss linguist Ferdinand de Saussure (1857-1913), considered language to be a sign system expressing ideas, comparable to writing, to the alphabet of the deaf and speech-impaired as well as to the *symbolic rite*. He saw language as the most important of these conceived systems, a science that studies sign life within social life; in being so, it could be part of social psychology, of general psychology and finally it was to be called semiology. This is how the study of signs has given birth to a new science, called semiotics and semiology, a field that examines the way communication and semnification works, the relations between code and mes sage, between sign and discourse⁹.

We understand that the structuralist doctrine is far from offering a reasonable explanation for present-day semiotics, however we still notice that the dual nature of the sign, of the *signified* (content) and the *signifier* (expression), maintains its formal validity within the *open work* as well. According to Umberto Eco, the open work incessantly changes its own denotations into connotations and its own meanings into the signifiers of other meanings, in a decodifying experience that becomes open and processual¹⁰.

The visual analogies of our applications rest on the correspondence between the *signified* and the *signifier* of the human body, the proportions,

⁹ Umberto Eco, Signo, Editorial Labor, Barcelona, 1988, p.17.

¹⁰ Idem, *Opera deschisă. Formă și indeterminare în practicile contemporane* Ed. pentru Literatură Universală, București, 1969, p. VIII.

or rather disproportions, being *significant*. The prehistoric man could intuitively perceive the components of a mathematic ratio. It is our understanding that the symbolizing process of the human body began with the division of the matching corporeal parts: one natural, alive, objectively proportioned, and yet ephemeral, the other one, artificial, subjectively proportioned, yet ever-lasting.

Chapter 2. Analogy as Premise

Comparative anthropometrics concerns us both from an objective point of view, as a visual creation research method, and a subjective point of view, as an inter-human bonding form. Anthropometric comparison is specific to human psychism. Details of various parts of the body, as well as body height, stimulate more or less conscious comparative perceptions.

As far as human beings are concerned, the visual comparison of certain anatomic components or of the entire body constitutes the premise for endless rhetoric. This is how the first individual and collective identities have evolved and this is how mankind's first heroes and gods were born - by comparison. In the case of heroes, the intuitive analogy has allowed certain imaginary identities to accumulate physical and moral qualities exclusively, whereas others to represent their fellows' negative aspects and defects only.

Translated in terms of Jungian analytical psychology, in the span of two million years, man has extended his psychological sphere from the collective and individual unconscious to *the ego*. Highly remarkable is the fact that the development stages of the physical-psychological relation are traceable within Jung's concepts: the archetypes, as fundamental elements of the collective unconscious, offer the Self, as an ideal model of the individual, various pre-existent forms, filled with content

through psychological life. The psychological contents associated to an archetype, also known as complex, manifest themselves at the personal unconscious level. Any complex has an archetypal associate and, also, any archetype generates a complex however, their manifestation differs according to the individual's experiences. Man's most important complex is the Ego complex, also known as identity complex. As suggested by its name, the Ego represents the image through which the individual perceives his own identity and the way he sees himself. The importance of the Ego is also highlighted by the central position of the complex within consciousness. Consequently, the corporal image as an Ego biological identity, has acquired multiple meanings, which is why the prehistoric figurine can be interpreted as an archetype, self or ego. In other words, the first statues may have been intuitive identity representations at the level of the collective or personal unconscious, at the level of the collective or personal conscious, or all at the same time. And perhaps it is in this very multidimensional psychic identity that the value of the first body representations lies. In semiotic terms, the signifier of the multiple signified adds cultural relevance to the figurines.

The fundamental connection between semiotic and perceptual analogy lies in the comparative nature of the presentation-representation binome. Prehistoric animism is based on Man's reflex to compare himself to the surrounding nature, to find himself in the forms of the surrounding environment. The mystic sensation of the body's own vivid reality testifies to the fact that *homo sapiens* compared himself to all of nature, thus enabling corporeality to encompass all concrete reality, subsequently enriched by the entire ideality of the inner world. *Instinctive comparison changed into metaphorical comparison*. Man compared himself to the stone and traded its form for permanence.

The individual's need to present himself by comparison, as well as his abilities to create a specific "tool" for every need he had, spurred Man's desire to represent himself. Similarities, and differences alike, had to be artistically expressed and stemmed from Man's paradoxical need to distinguish and integrate himself into the social environment. By means of representation, Man found himself in front of another self, a replica of the living one, yet still and durable. Despite inadequacies, the representation was embodying the individual's ability to pass from impression to expression, and this metaphoric comparison could be made exclusively by the "Ego". It was, by all means, a preconscious phase of the Ego, in which the instinct of procreation was sublimed in the intuition of creation, nevertheless without any rational, aesthetic or moral understanding of the gesture. From this point of view, comparative anthropometrics links the body, as first tool of the self, to the figurine, as first tool of self-consciousness. It is practically a simulation of a mental perception, a first expression through corporealisation.

Chapter 3. The Canon as Analogy

Before proceeding to the presentation of the *comparative* anthropometric method, several mentions and preliminary conclusions are necessary.

As shown above, in the long span between the Upper Paleolithic and Antiquity, man was concerned with presenting and representing the corporal being as the main form of expression of, and to, the universe. The prehistoric figurines and, later, statues created an anthropomorphic three-dimensional *media*, by means of which messages, varying from ideas and instant feelings to the policies, philosophies and religions of the time, were conveyed. Man naturally appealed to the corporal *inter-medium* so as to connect himself to the others. The references to

this communication form have made us use the "corporeality" concept, according to the views expressed by archaeologist Douglass W. Bailey. However, from a semiotic point of view, we have taken this reasoning further and have extended the meaning of the term, by analysing the anthropomorphic structure in its triple quality as sender, vehicle and receiver. This *corporeality* extended to the field of semiology allows for process identification at semantic, syntactic and pragmatic levels. We have not restricted ourselves to the understanding of the fact that the "Neolithic figurines were philosophies in the politics of being" 11, on the contrary, we have examined how artisan's intuition led him to use units and anthropometric concepts. We have noticed that such anthropometric measurement units were identified and applied much later in Antiquity, some of them being also valid today. Therefore we consider that corporal reference system could still open new perspectives in statue interpretation by replacement of the metrological grid with the analogical one. It is possible for the artistic language of prehistoric figurines to have been "written" in an anthropometric "alphabet". The norms of the first ancient canons prove the very fact that the anthropomorphic figure was seen as a convention for both the plastic and the written language. Hieroglyphics and Egyptian canons highlight the *common corporeality* of texts and sculptures. The body vacillated between sign and symbol status, in an environment in which both sender and receiver enjoyed the same anatomy.

So what does the Greek canon bring us now? Besides its immense contribution to the development of the fine arts, we hold that the difference between the art of Ancient Egypt and that of Ancient Greece lies in the fact that the first gave birth to the "colossal" (as shown by the Pyramids), whereas the second gave birth to colossal artists. Through an unprecedented aesthetic and ethical exultation of the nude, the

¹¹ Douglass W. Bailey, op.cit., p.202.

ancient Greeks conveyed a double immortal identity to the subject and the sculpted character entered into universality along with the author. The sculptor's identity revealed itself to his fellow citizens through the stone-released subject. The artist presented himself to the world through artful representation. The fortress *corporeality* facilitated the junction of alterity with the self, and the subconscious communication at this level could have had but anthropometric coherence; it was only here that sculpture and geometry, gymnastics and architecture, philosophy and religion could find their good and true measure. Philosophical schools have debated upon the theme of alterity both horizontally, between members of the community, and vertically, between humans and gods, in both cases appealing to the same *corporeal* environment. In other words, we are witnesses to Man's first attempts to address the issue of imagology. The human being had an individual and a collective body, both of which were identity-conveying. A citizen could be recognized by his fellows in the nearby states only through his cultural identity. Corporeality was thus starting to betray its profoundly paradoxical nature: it brought people closer together all the while pulling them apart, by giving them exactly what they needed - their identity.

Chapter 4. Analogy as Method

Two issues related to symmetry, in both the ancient and modern significances of the term, will be identified here. This is necessary, as the term of symmetry nowadays has a different significance than it used to have in the past. "Symmetry is, in a way, the first and most obvious principle of composition. Man holds the paradigm of this principle in his own body and he has been able to notice it objectively in the surrounding natural world of plants, minerals or animal bodies. A powerful expressive intensity has always sprung out of symmetry,

as one of the most prevalent space representations, because *symmetry sets in contrast two similar, yet equally diverse, and two equal in size, yet opposite entities*"¹². In Antiquity, symmetry represented the sum of all means used to give "a pleasant proportion to an architectural or art work, through the right choice of ratios between the parts or elements of the work themselves and between those elements or parts and the whole work"¹³. Symmetry comes etymologically from the Greek συν μετρον (sin metron), which was translated into Latin by commensus to mean measurement by *common units*, standards or common modules. The interpretation of the Vitruvian tracts clarifies the distinction between *arithmethic* and *geometric* symmetry, the latter allowing the right proportioning of areas, inferring that arithmethic symmetry has a linear dimension¹⁴. The vertical anthropometric analogies will be identified in our study as evidence of the contribution linear symmetry has had on the articulation of artistic language in different cultures.

In the first chapter of the third Book of *De Architectura*, Vitruvius defines the human body centre as follows: *in the human body the central point is naturally the navel. For if a man is placed flat on his back, with his hands and feet extended, and a pair of compasses centred at his navel, the fingers and toes of his two hands and feet will touch the circumference of a circle described therefrom. And just as the human body yields a circular outline, so too a square figure may be found from it. For if the distance from the soles of the feet to the top of the head is measured and that measure is then applied to the outstretched arms, the breadth will be found to be the same as the height, as in the case of plane surfaces which are perfectly square"¹⁵.*

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¹² Cornel Ailincăi, *Introducere în gramatica limbajului vizual*, Ed. Dacia, Cluj-Napoca, 1982, pp.152 – 153.

¹³ H.R.Radian, op.cit., p.57

¹⁴ Matila C. Ghyka, op.cit., p.67.

¹⁵ www.vitruvius.be/boek3h1.htm.

The navel will be called the **centre of biometric symmetry** and is placed at the intersection of the circumscribed circle's radii (homo ad *circulum*); by intersecting the square's diagonals (*homo ad quadratum*) we obtain the isometric symmetry centre that divides the height of the body into two equal parts. The biometric symmetry centre is identified by inscribing the body in a circle, a symbol of the sky, of the spiritual world in infinite motion; the isometric symmetry centre is identified by inscribing the body in a square, a symbol of the material world governed by four fundamental elements (water, air, earth and fire), by four matter aggregation states (liquid, gas, solid, plasma), and by four cardinal points (north, south, east and west). The arms' ascending gesture indicates the circle, which is the sky, with all of its significances, whereas the gesture of arms' horizontal reach indicates the horizon, or earthly world. We notice that corporal attitude is directly connected to the symbolic meaning. Physical appearance is the centre of metaphysical representation. The body-sign becomes the bodysymbol. The two hypostases, common to all human beings, decodify their esoteric meaning, being the mode in which corporeality unveils the language of the initiated. Through the two centres of symmetry, the harmony of corporeality is extended to the architectural landscape. From the Vitruvian tract on architecture, we understand that much as the harmony of a temple must contain the measure of the human body, so must the harmony of the human body be lived with the greatness of a temple. The body exposes and imposes its most intimate physical and metaphysical, personal and transpersonal identity. Through this corporeal "unit", Man has access to the conundrums of the material and spiritual world, to whatever determines his life as an individual and species.

Applications

Within this subchapter, measurements by the comparative anthropometric method have been made in well over two hundred anthropomorphic artistic representations belonging to: the Paleolithic fine arts, modern primitive art, Anatolian, Balkan, Romanian, Mesopotamian, Egyptian, Chinese, Japanese, Mexican fine arts as well as Inca, Ecuadorian, Greek, Hindu, Etruscan and Roman fine arts.

Through the perception and intuitive application of the Golden section, the artistic language of Paleolithic figurines represents Man's first attempt to transcend his biological body. It is this deviation from the natural harmony form that proves the prehistoric artist's stylistic authenticity and facilitates his access to the first anthropomorphous archetypes. Deviation from the "objective canon" of the living body articulates artistic language, the "golden" disporportions being the subjective expressions of cosmic harmony dynamics through the agency of corporal harmony. Such a communication form maintains both the sender and receiver alike on an intuitive plane, irrespective of spatialtemporal coordinates of perception. From this perspective, *corporeality* may be defined as an environment in which the sender, receiver and the vehicle are anthropomorphically alike. Here, comparative anthropometry is not only a rational and objective investigation method, it also captures corporeal language during its elaboration and perception process, with all its subjective and emotional implications; comparison itself becomes the pillar of communication and communion, beyond liminal consciousness. Inside or outside of any canon, the body proportionality unwillingly generates emotions in the viewer. The apodictic nature of the body-mind relation structures the individual and collective subconscious of corporeality, which is why the ambiguity of artistic renditions remains the fecund source of an endless series of interpretations.

Chapter 5. Elements of data processing, statistical analysis and result interpretation

This section contains an outline of all concepts and informatics elements necessary for measurement preparation and result analysis.

For visual juxtaposition, the *Adobe Photoshop* (CS3 Extended, Version 10.0) application program was utilized. This software is intended for bitmap (BMP) document processing, i.e. image-format file used for storage of digital photographs, especially within Microsoft Windows operating systems. By means of such specific instruments, the images of the anthropomorphic representations of this study have been optimized in view of measurement performance.

For a more thorough analysis, the measurements presented in the previous chapter were structured in an information system, called a *database*, which allows for faster collection, processing and analysis of file-formatted information, easily identifiable according to various analysis and interpretation criteria.

Database interrogation was made by applying the χ^2 comparison and association test¹⁶. This test is frequently used in social sciences due to its simplicity in calculating experimental data specifics and for its immediate decision-making possibilities upon application.

Result interpretation points to the existence of some cause in the selection of artistic proportions. In other words, the recurrence of golden deviations highlights the fact that artistic disproportioning results from

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Florin Constantin Stănescu, Aplicațiile calculatoarelor în arheologie, Alba-Iulia, 2003, pp. 48-53. Formulele, prezentarea, exemplul şi explicațiile au fost preluate din lucrarea menționată.

a lack of knowledge regarding elementary anthropometric reports and constitutes a natural form of expressing aesthetic experiences. The psychological and semiotic considerations of such a research direction can be further developed so as to unravel the perceptual evolution of the corporeal environment.

On the other hand, inclusion of new measurements and interrogations in the direction provided by our current approach in the database offers the possibility of applications to various research domains. The raising of any relevant questions becomes important as their answers can be provided by means of statistical calculation methods and structured databases adapted to these issues.

The online source for measurements performed through the comparative anthropometric method and database are located at:

http://www.antropoz.zaan.eu

Chapter 6. Conclusions

The comparative anthropometry applications of the previous chapter generate a wide series of questions: What new information does this method of compared anthropometry tell us? What is the meaning of "golden deviation"? Why is it found over such a long period of time? What does the "golden deviation" indicate compared to the "golden section"? How does it help the interpretation of figurines and statues? What part does it play in the *mean* of corporeality? Several answers will be provided below with no claim to exhausting the amplitude and complexity of the issues.

Juxtaposition is psychologically justified through the comparative reflex of visual perception. Eyeing up and down, as an atavistic reflex of visual assessment, is found with most species except with Man, in whose case it has been objectivized through the artistic representation of the body. The mechanism of instinctive comparison becomes thereby

an objective research method. This method is reduced to the analogous measurement of the Saussurian components of communication. The semiotic model is relevant due to the elementary principle it represents, i.e. the process of visual semnification.

The sculpted nude represents Man's liminal state, the form that separates the individual from the world. The limit of the human body contour points to the binome of existence in all its forms:

Micro-cosmos – macro-cosmos, intra-corporal – inter-corporal, personal – transpersonal, physical – metaphysical, real – ideal, relative – absolute, being – non-being, life – death, conscious – unconscious, supraliminal – subliminal, subjective – objective, subject – object, natural – cultural, individual – social, self – ego, profane – initiated, identity – alterity, man – god, amorphic – anthropomorphic, individual – species etc.

In anthropomorphic rhetoric, the golden deviation does not articulate a conscious message, but rather a subconscious one, which belongs to the collective mentality and acts like a genuine archetype in the artistic expression of a liminal state. The corporeal *continuum* fuelled by this permanent search is governed by nature and artificial symmetries, at once rigorous, at other times ambiguous, yet always anthropometric. This is why comparative anthropometry represents a measurement method and at the same time, a model for the visual perception of nude harmony; juxtaposing presentation and human body representation is an axiomatic mental reflex which forms the basis of corporeal language and, with no discursive emphasis, we may hold that it captures the syncretism between the archetype of creation and that of communication. The syntax of expression is concrete, anatomic and hardly any abstract and ambiguity facilitates the polysemic, fundamentally intuitive message, both in elaboration and perception. Gliding between the sensorial and sensual, the causes and effects of corporeal language are neuronal and hormonal alike. The hermeneutic sense of

anthropomorphic fine art lies precisely in this double level of manifestation

The message addresses the mind as well as the body, as it resorts to a "messenger" with a holistic morphology, subliminally analogous to the receiver's body. From a natural body, via an artificial body, to another natural body - this is the circuit of anthropomorphic artistic language, meant to facilitate connections between the remotest zones of the human being, from the high peaks of individual consciousness to the abyssal emotions of the collective mental.

Encrypted or decodified, *anthropoglyphs* have represented the communion and communication means for both the initiated and the non-initiated alike. They represent a synchronic and diachronic bridge between people, over places and across all times. In day-to-day life, as throughout history, *corporeality* has proven itself to be the first and ultimate reality of our identity as individuals and species. In this anthropomorphic mass-media, the *golden deviation* evinces the paradoxical essence of creation: on the one hand, it expresses the subliminal perception of an objective anthropomorphic symmetry, on the other, the subjective application of the golden proportion, as a primordial "figure of style" in the history of fine art language and communication.

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