

EthArts



Ethology of the Arts

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Cover illustrations:

upper left: Head of female statue, Ivory Coast, Africa. Collection Irenäus Eibl-Eibesfeldt.

upper right: Dance, accompanied by singing and drums. Melpa/Medlpa, Papua New Guinea. Photograph: Irenäus Eibl-Eibesfeldt

lower left: Mesa Verde Cliff Dwellings. Photograph: Gerhard Apfelauer

lower right: Christ Pantocrator, Cupola of the church in Sfântu Gheorghe/Tulcea, Romania. Painter: Adrian Iurco. Photograph: Wulf Schiefenhövel

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Introduction

Wulf Schiefenhövel

The evolutionary turn has so far mostly taken place in the individual disciplines, i.e. musicologists discuss biopsychological foundations of making and perceiving music, the scholars dealing with works of literature study Darwinian building blocks of written texts etc. Still rare, therefore, are works like that of Gregor Paul (1988) who stresses, from a philosophical and historic point of view, the “universal validity of aesthetic judgements on beauty” or that of Ellen Dissanayake who argues (1992) that the sense for beauty is an integral part of the human condition, whether expressed in ritual, visual, verbal or musical art. The planned book is designed to contribute to the incipient interdisciplinarity in the field of evolutionary art research. This, we hope, will be achieved by having representatives of various backgrounds discussing the possibilities and also the problems connected to an ethological approach to understand art.

Internationally recognised scholars who utilise this novel and promising approach or are interested in it were invited to the first EthArts symposium, held in February 2011 at the Max Planck Institute in Andechs. It provided one of the rare fora for discussion across the four fields and facilitated the development of a more encompassing evolutionary paradigm to understand motivations, forms and functions connected to producing the various works of art. One of the key questions addressed is whether the four forms of art can be traced to one evolved principle of aesthetic perception or whether different types of representation should be seen as outcomes of more specific adaptations which occurred, independently, throughout the stages of hominization and the shaping of our own species. Possibly both play a role.

Whereas evolutionary psychologists and sociobiologists usually focus their studies on “ultimate” functions of behaviour, in this case artistic behaviour, human ethology centres on real behaviour in real, naturalistic situations and, of particular importance, also on the repercussions of such behaviour on the group and the group’s reaction. The symposium thus combined the discussion of possible “ultimate” benefits of producing art (how does it contribute to the artist’s survival and, to reproductive success?), of “proximate” (physiological, neurobiological, psychological) mechanisms and of group effects.

Artistic expression, often involving symbolism, is one of the core characteristics of our species. Aurignacian human and animals figurines and the world oldest flutes from caves in Swabia (Conard 2009, Conard et al. 2009) exemplify the quest for beauty, for the extraordinary. It must have been a strong force shaping human behaviour.

Rather than culture specificity, which is stressed e.g. by cultural anthropology and branches of sociology, history and similar disciplines, universal human tendencies to perceive, feel, think and behave are postulated in our approach. Evolutionary scenarios, derived from a phylogenetic, palaeoanthropological and cross-cultural approach as well as adaptive functionality rather than a constructivist position form the

base from which we try to understand the works of worldwide art, the motivation of their creators as well as the possible perceptions and reactions of their addressees, as individuals or groups. Also in this respect, the evolutionary way to examine human artistic expression widens the scope of its scientific analysis. In the classic tradition to study the different forms of art the focus is usually on the painter, the composer, architect or writer whose biography and style are analysed.

Several book publications, inspired by this novel approach, have appeared, among them "Homo Aestheticus" (1992) by Ellen Dissanayake, The "Mating Mind" (2000) by Geoffrey Miller, Literary Darwinism (2004) by Joseph Carroll, "Animal Poeta" (2004) by Karl Eibl; "An Anthropology of Art" (2006), edited by Howard Murphey und Morgan Perkins, "The Singing Neanderthals" (2006) by Steven Mithen, "The Art Instinct" by Dennis Dutton (2009). "Weltsprache Kunst" by Irenäus Eibl-Eibesfeldt and Christa Sütterlin (2007) is a comprehensive comparative diachronic and cross-cultural study of paintings and sculptures based on the evolutionary paradigm. In a previous publication "Im Banne der Angst" (1992) the same authors demonstrated the cross-cultural psychological functionality of apotropaic symbols - pieces of art believed to be effective in banning evil powers.

New approaches aiming at a better understanding of the various facets represented by the arts are characterised by taking into focus possible phylogenetic adaptations which have shaped the artistic capacities of our ancestors. This line of reasoning argues that it must have been advantageous for early *Homo* to be a good singer, a skilful dancer, a convincing story teller, a painter of breathtaking images, the mind behind such awe inspiring architectural undertakings as Stonehenge, the Acropolis and Borobudur, a carver of suggestive figurines or the maker and player of a musical instrument.

With this reader we hope to elicit, among colleagues in the various field of academia, interest in the evolutionary analysis of all human art. At the same time this collection of abstracts is hoped to have an appetising effect for possible publishers. A book with extended versions of the contributions assembled here plus some additional chapters is gaining shape. We hope to have it out by the end of the year.

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General Issues

A specifically ethological view of art: the artification hypothesis

Ellen Dissanayake

In order to understand the emergence of art in human evolution, I use two concepts from the science of ethology: (1) I treat art as a behavior (“artification”): as something that people do, and (2) I trace its origin to elements of a ritualized communicative interaction between ancestral mothers and infants.

Artification, in my scheme, is the capacity and motivation to deliberately make ordinary things extra-ordinary. It occurs, for example, when adorning or elaborating ordinary bodies, artifacts, and surroundings, altering body movements in dance or vocal sounds in song, and elaborating and formalizing words in literary (as opposed to ordinary) language — that is, I view it as a “common denominator” that underlies all the arts. In this view, artification is a biologically distinctive and noteworthy evolved characteristic of humans and the artification hypothesis is a new and specifically ethological way to address the subject of art.

Prehistorians have described two early adaptations in hominin evolution — bipedality and brain enlargement — that resulted in reduced gestation and premature birth of highly altricial (helpless) infants who, unlike other primates, required prolonged and assiduous care by their mothers. To address this adaptive problem, a universally-observable and well-documented interactive behavior evolved in which mothers present affinitive communicative signals of face, voice, and body to receptive infants. Derived from already existent visual, vocal, and gestural signals of friendliness and accord performed among adults, a “ritualized behavior” (as described by pioneers of ethology such as Konrad Lorenz, Niko Tinbergen, and Irenäus Eibl-Eibesfeldt) evolved over time between ancestral mothers and their babies, perhaps as early as 1.6 million years ago. Fundamental affinitive signals of the face (e.g., mutual gaze, smile, head bob, nod, open eyes and mouth), voice (soft, slowed, undulating, repetitive) and body (touch, pat, stroke, rub, hug, kiss) were simplified, repeated, exaggerated, and elaborated. Popularly called “baby talk” today, these packages of altered (or ritualized) signals attracted infant interest and positive response and at the same time inadvertently reinforced the mother’s own neural circuits and brain chemistry for affiliation, thereby motivating her to give requisite care to her infant. This ritualized interaction assisted infant survival and maternal reproductive success.

Ancestral infants themselves evolved receptivity to these evolved maternal “operations” on affinitive signals, thereby providing an emotional reservoir for what later could be exapted as a deliberate behavior of artification. I propose that these operations - formalization (which includes shaping, composing, patterning, organizing, schematizing, simplifying), repetition, exaggeration, and elaboration - are also performed by artifiers when they make ordinary things (e.g., skin, hair, rock surfaces, natural surroundings, common artifacts, voices, body movements, words, narratives)

extra-ordinary. The operations of artification, as in the precursor mother-infant interaction, attract attention, sustain interest, and shape and mold emotion.

I trace the motivation for actual deliberate artification to a much later stage of human evolution in which higher mental capacities of memory and foresight led to (a) anxiety about securing food, safety, health, fertility, and other biologically or psychologically important needs and (b) a strong desire to control or influence their attainment. In all known societies, transitional or uncertain contexts lead to ritual practices that are composed of visually, vocally, and gesturally artified behaviors — that is, visual art, song, and dance — which often occur all together in a multi-modal performance (as in the antecedent mother-infant interaction).

The operations of artification can be viewed as design features that address two adaptive problems, individual debilitating stress/anxiety and group cooperation, by providing tension-reducing and group coordinating activities — organized, patterned, unifying, and emotionally-satisfying behavior in visual, vocal, and gestural modalities. Artifications draw interest and attention to ritual practices, making them particularly compelling and powerful. Such costly (extra-ordinary) signals indicate the degree of importance of (and emotional investment in) the occasion they adorn. They signal to higher powers, to others, to one's group, and to oneself “See how much I (we) care about this matter (artifact, occasion).”

Calling these activities examples of “artification” (rather than calling their products “art”) avoids the connotations of aesthetic value, beauty, skill, depiction, creativity, and self-expression inherent in the modern Western concept. When applied to non-Western, folk, popular, and paleoarts, the approach provides new ways of thinking about motivation, function, and meaning even of unskilled or non-iconic forms.

Art and Tinbergen's four questions

Nancy E. Aiken

Ethologists ask why individual members of species behave the way they do. Human beings are art makers and responders to art, so an ethologist would ask why humans make and respond to art, which are behaviors that set them apart, somewhat, from other animals. An ethologist would begin to study these behaviors by describing the behaviors under natural circumstances. Children spontaneously draw and keep a musical beat. From archaeological finds we know that art making behavior has been going on for, possibly, at least as long as we have been *Homo sapiens*. Because art was made, it might be assumed that art was also responded to thousands of years ago.

People respond to art emotionally. The response might be pleasurable resulting in a smile and a feeling of rightness or the response might be thrilling resulting in a feeling of excitement. These are the basic emotions of pleasure and fear. The question ethologists ask is: “Why do people respond emotionally to art?”

One of the founders of ethology, Niko Tinbergen, broke the primary question of why individuals behave the way they do into four questions (Tinbergen, 1963). This paper will briefly answer each of these questions about how and why people respond to art.

1. What is the proximate cause of the behavior; that is, what mechanism within and without causes the behavior? For art the answer lies in releasers and the response to those releasers (unconditioned stimuli and responses) for fear and the mammalian bonding mechanism for pleasure.

The releaser is an unconditioned stimulus that will cause a response more or less predictably every time it is presented. As I suggested elsewhere (Aiken, 1998a), the response may be subject to habituation and context, but it is still a reliable response. A couple of releasers used in visual art to evoke some level of fear are eye spots and zig zag lines. Masks often offer excellent examples of the eye spot releaser (Aiken, 1998a & 1998b; Coss, 1965).

The mammalian bonding mechanism consists of rhythmic movement which releases dopamine, the opioids, and oxytocin resulting in pleasure and trust, and, thus, bonding (Panksepp, 1998; Young, et al, 2001; Keverne & Curley, 2004; Kosfeld, et al, 2005). The temporal arts, singing and dancing, provide the rhythmic movement that promotes bonding among individuals.

2. The second of Tinbergen's four questions is: What experiences promote the behavior during the individual's development? For art, conditioned responses to both fearful and pleasurable stimuli form individual response to art. Unconditioned stimuli evoking fear and the mammalian bonding mechanism evoking pleasure, when associated with neutral stimuli, create conditioned responses that evoke the same emotion. For example, monumentality appears to be a releaser of fear; thus, monumental statues of leaders would by association create fear or awe of the leaders.

3. Tinbergen's third question is, “What is the adaptive function of the behavior?” That is, why does this behavior enhance survival and reproductive success? My

answer is that art promotes cooperative behavior, without conscious awareness, by evoking fear and pleasure. Fear is a great motivator. Tyrants have proven over and over again that an enemy at the gate will create enough fear to cause people to give up everything to keep the enemy (real or imagined) out. The school yard bully uses gangster tactics to get what he or she wants. Fearful people will do what the leader wants, but they may plot rebellion. However, if the leader uses artful tactics to create fear, the people will do what the leader wants without realizing they have been manipulated by fear because they do not recognize their response as fear.

Pleasure is an even more effective way to get people to follow the leader. Moving together in time provides pleasurable feelings resulting in bonding and trust. Pleasure in the extreme can make “true believers” who will do the bidding of a leader for good or evil (Sargant (1974); Aiken (2010)).

4. Tinbergen’s fourth question is, “What is the evolutionary history of the behavior?” Humans evolved as social animals banding together to gain survival potential. As childhood became more and more extended, cooperation from caregivers other than mother became critical (Hrdy, 2009). Being hunters and gatherers also required extreme cooperation. Behaviors which encouraged care giving from others such as baby talk became enhanced into the temporal arts (Dissanayake, 2000), and brute force threats became subliminal so that cooperation could be promoted without second guessing. Humans evolved as easily influenced individuals responding to what we call art in order to maintain cooperation within the group.

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On resonance, faces, signs, archetypes, beauty, the brain, ethology, and the purpose of art

Discussion between Ugo Dossi, Irenäus Eibl-Eibesfeldt, Christa Sütterlin

Sütterlin: You have called your faces “Resonances.” How is this to be understood?

Dossi: As literally as possible. I understand resonance in the sense of to resonate, to stir, to set swinging. It is the governing principle of the series of works. They are large-format table panel paintings that rely on the immediate transmission effect of faces. Facial movements trigger emotions, moods expressed in the face cause similar moods to resonate in the viewer. My focus has been on very specific emotional dispositions that I want to stir in the viewer. Moods that are important for myself and that I would like to also activate inside of me, dispositions such as inner awareness, meditative contemplation, or simply equanimity.

Sütterlin: The faces in these works of art appear to have a golden glow radiating from inside and they have an inexplicable spatial effect. How does this come about?

Dossi: It is meant to remain something inexplicable, something that evades the superficial and suggests immateriality. Maybe comparable to the golden background in medieval painting. Our habits of perception are not prepared for this holographic effect and thus it is difficult to categorize visually. And whatever has not been categorized also remains movable as far as associations are concerned. I see this very positively. It helps to keep the windows of perception open for what the pictures convey.

Sütterlin: And that would be?

Dossi: The faces and the signs contain emotions and inner dispositions. They are to convey them and transfer them onto the viewer. As an artist, I work with the phenomenon of the transfer of emotions, while ethologists study it. From your point of view, what are the mechanics of this transfer?

Eibl-Eibesfeldt: There are various ways to achieve this. We know that in the brain alone there is a multitude of amines whose level rises and falls, influencing moods. On the one hand, this happens on the basis of endocrines, on the other hand, whole networks are linked of course. After all, the brain is an immensely complicated apparatus. Assuming there are 10 billion nerve cells each of which is capable of having about 10,000 links with every other one, it comes as no surprise that some impressions are filtered out by consciousness. But if I see the same face again, even after ten years, I know precisely: I have seen this person before, he or she has merely changed a bit. The transfer of emotions we experience as “feelings” requires that our communication partner is able to perceptibly transmit his moods through his behavior. For this transmission, we have facial movements innate to all human beings. We do not know of any culture where people do not smile or cry. Smiling causes a friendly reaction, crying makes sad and often makes the partner join in the crying. All this requires specific configurations in the central nervous system. There are those for recognizing faces and those specialized in recognizing facial movements.

Sütterlin: The system needs a perceptible trigger for the transfer of emotions. And this

already brings us to the signs and signals, which, in a certain sense, can be regarded as symbols because they selectively elicit specific contents that activate a similar experience in different people. This is an area where I would say that the unconscious of both parties is communicating and where archetypal signs address more the collective than the personal unconscious. Furthermore, there are surveys, which prove that we evaluate and process what is verbalized far less strongly than the accompanying facial movements. If our facial movements are friendly, the basic response from the other person remains friendly even if we use relatively coarse language. On the other hand, someone may say the kindest of words with a grim facial expression and we will judge them as being unfriendly. There is a clear hierarchy involved and we will interpret any discrepancy as a lie and then evaluate the overall impression according to the facial movements.

Dossi: What happens if the signals come from a completely different culture with a different language of facial movements?

Eibl-Eibesfeldt: Facial movements are never completely foreign to us. Even before we get to know strangers personally, we see them smile the way we do, cry the way we do, and use the same eyebrow flashes we do. Down to every details, they use the same facial movements, such as in the case of embarrassment, which is the result of an overlap-ping of two basic tendencies of human social behavior: friendly contact readiness and contact avoidance springing from deep-seated mistrust.

Sütterlin: Friendly facial signals are also able to bridge the total language deficit when one doesn't understand a single word of the foreign language.

Dossi: Nonverbal expression obviously touches us more directly and more existentially. The language of facial movements is rich and also highly complex. What is of special interest to me is how facial movements transmit moods. For me, this is a kind of inner pitch one uses to make oneself resonate and tune into a similar mood . . .

Sütterlin . . . empathy . . .

Eibl-Eibesfeldt: . . . which is already shown by a newborn baby. If you play various tapes to newborn babies, they start to cry if they hear crying. And it is highly probable that they feel the same we do when we cry. The expressive movements of the face per se have a mood-transmitting effect. If I yawn, it is contagious, which possibly made sense in earlier times because a group synchronized their falling asleep, nobody would wander around at night, an action which can be very dangerous for daylight creatures like us.

Dossi: Isn't there an unconscious and, to a large extent, automatic imitative instinct? Small children already show it. They see someone smile and react with a smile. If you stick out your tongue, they show you their tongue. You blink your eye and they don't know how to do that yet, but they try, often making a funny grimace. They try to imitate the facial expression they see and this, so I believe, quite involuntarily, as if wanting to feel what is going on in the other person by becoming aware of their own, changed facial expression.

Eibl-Eibesfeldt: Which is already apparent in the fact that, obviously based on pre-knowledge, on an evolutionary programming, a baby of only a few days has whole

repertoire of expressive facial movements at its command and uses this to mirror what it perceives. A whole series of surveys exists on this topic. It has been found that there are areas in the brain with so-called mirror neurons which make this possible. There is a network of nerve cells -from perception to motor activity - that cause us to react by reflex.

Sütterlin: The question is whether this causes the mood to be transmitted directly. I think sign systems are important since, like a tuning fork, they facilitate the mutual tuning-in. Communication without language would remain much too vague. We all absorb moods via their physical signs. These may be mimic, gestural, or also verbal. Nonverbal language is certainly more universal and more reliable. But an instrument is required.

Eibl-Eibesfeldt: This is a communication system based on phylogenetic adaptation. We know that children born deaf and blind have basic expressive movements of the face even though they have grown up in eternal night and silence. The sign system is present, as well as the ability to mirror these signs. They consistently express the same moods. The children born blind do not just smile blindly into the world but when their mothers play with them, and they do not cry when the mothers are friendly towards them but when they have been put down and are left alone. Learning itself is channeled so that at certain stages there is a preference for learning specific things. There are also specific brain areas for recognizing individual faces and, separate from these areas, others for recognizing faces in general. Other areas in turn are specialized for recognizing objects. There is no chaos in the brain. Evolutionary history has worked on this for a long time - and with success.

Sütterlin: The face is a highly important instrument of communication . . .

Eibl-Eibesfeldt: . . . and it is, after all, also the mirror of the soul since, as talking beings, we naturally orient ourselves toward a partner. All social behavior hinges on the faces of the people around us. This started very late in evolution. It cannot be detected before the mother-young relationship in the big apes. Earlier on, the primates were buttocks- oriented. This re-orientation is certainly connected with the intimacy of bonding and with vocalization, and later in humans with speech. Only mammals that recognize each other by their voice, such as sea lions, take up contact from snout to snout immediately after birth and developed rubbing their noses as a ritual of greeting. In addition to the exchange of pheromones, the vocal exchange increasingly gains importance. In this the face is already a fundamental point of reference. The face is recognized but the facial expressions are still not distinctive.

Sütterlin: Yet independent of facial movements a physiognomy has also evolved that is the prerequisite for our facial communication, not for emotions alone. And if one looks at the face of Nefertiti, there is more physiognomy than emotion. It is hard to say what the face transmits. There is not much of a personal system in this face, it is simply lovely. It does not show strong facial movements. I don't know what moods it transmit, a certain kind of disposition, however . . .

Eibl-Eibesfeldt: . . . this inner glow you address is an expression of sublimity. This being-removed, as if one were looking towards the inside in order not to be distracted

by an obtrusive reality. I see in it the tendency towards retreat characteristic of sages and saints. The faces Ugo uses in his pictures are ideal faces that express this attitude of being above- things.

Sütterlin: If we look at a Nefertiti by Ugo, we can see that she is lovely yet she doesn't affect us with emotions, moods, intentions. She leaves us in contemplation, she doesn't interact with us, she somehow remains sublime . . .

Eibl-Eibesfeldt: . . . to be sublime, distanced, is also a disposition, one that is for instance referred to in Buddhism time and again. To master one's passion is an ideal worth striving for. This is about the idea of a role model and a lot can be said on this subject. For a role model is not defined by personal characteristics but is meant to portray a human being that is valid for everybody. And there the Minerva is a very good example. She is, so to speak, a kind of primal mother, the protective cloak of the Madonna as well as a metaphor for the birth of science and art. The patroness of all the achievements that make man a cultural being. It is interesting that you have overlaid this head with a drawing representing an embryo, a still unborn human being.

Sütterlin: What made you choose this specific drawing? Were you not afraid it could distract from the face?

Dossi: Of course the drawing is meant to distract, distract and then again attract the attention. The face and the sign are on two different picture planes and also represent different levels of meaning entering into a dialogue with each other. In two different languages, they address two different worlds, they irritate and at the same time stimulate each other. Picture and sign are processed by two different parts of pictorial perception. The actual picture as a whole probably only grows inside the viewer, through the interference of these two processes. As signs or drawings, I have consistently used unconsciously created scribblings, automatic drawings, which, by their spontaneous nature, are diametrically opposed to the idealized and very much intentionally formed faces. The heads create a dominant opposite into whose eyes we look directly. The signs run across the faces like scratches, like an alien element, and this involuntarily raises questions. And that is also, what it should do, it keeps the mind working.

Sütterlin: Are you saying: the face talks with the drawing and the viewer is the listener?

Dossi: For me it's a bit as if you were hearing two different things with the left and right ear, which only make sense when combined. Together they make a statement without creating a common sound. The faces and the drawings are not meant to somehow formally configurate. They play on the picture format they share but are independent of each other. It is their content that is independently absorbed and thus creates the actual picture.

Eibl-Eibesfeldt: . . . it challenges me, the overlaying of the line drawing draws my attention. I wonder what it means, it awakens my curiosity, my thinking apparatus starts working and begins to interpret, to try and grasp the message that might be concealed: In this way, I look at the picture in even more detail. There is a foreground and a background and I oscillate between them.

Sütterlin. . . it forms attention guiding structures . . .

Dossi: . . . Ernst Pöppel said in this respect that these two elements are processed in two different areas of the brain. I am absolutely convinced of this. It would now be interesting to find out what exactly happens if incompatible pictorial information reaches different areas simultaneously . . .

Eibl-Eibesfeldt: . . . it creates tensions. It's like a dissonance. It leads to harmonies of a new kind that cannot be predicted. All the same, I believe that the artist is aware of his intentions . . .

Dossi: . . . the picture is the sender and in the picture is the face. This doesn't work with every face. The transpersonal character of the face is very important. The individual features, which Christa calls an achievement in the cultural history of portraiture, are of no use to me. They are a disturbing periphery which I remove as far as possible.

Eibl-Eibesfeldt: . . . because these features have no common value. You are interested in portraying a canon of values...

Sütterlin: . . as an artist, you may of course say: I don't want all these embellishments, after all, I want to create magic, transmit moods. But when I talk about portraits, I don't talk about photographic realism. A good portraitist similarly reduces his picture. He is also more interested in the potential of the face than its momentary features. In a portrait, a large amount of time is condensed, many memories and associations are brought together, and this is a process photography cannot really achieve. I believe every portrait is always also an abstraction, general features creep into it via the individual, something which is very important to me.

Eibl-Eibesfeldt: . . . this follows the laws of gestalt perception. Trivial matter is reduced, there is a focus, an emphasis on the essential. Rembrandt for instance makes his faces glow out of the depth, out of a background consisting only of darkness. This isn't reality either but an artistic representation, which makes his faces stand out in this way by omitting all the details of the background. It is a bit like with the faces Ugo uses, they also always surface from the pool of a dark, empty background.

Dossi: Please let me once again return to the phenomenon of mood. A mood can be a reflex, for example caused by an exterior event, like a kind of inner meteorology. But there are also inner moods that, from my point of view, are an accomplished product of our culture. An inner disposition that is the expression of wisdom or serenity, of being above trivial matters, of a perception of the eternal in the here and now. It is these moods I want to transmit with the help of what I understand by art.

Music

An anthropological toolbox for music analysis

Christian Lehmann

The Darwinian approach to human music has led to some plausible explanations for the evolutionary origins of musical behaviour: Those early humans who were equipped with relative pitch perception, rhythmic feeling and a good singing voice (and who enjoyed to make use of all this) were able to meet some essential challenges in their hunter-gatherer society, had more offspring than their non-musical conspecifics – and became our ancestors. That is why we (except approx. 3% of the human population) are more or less musical people.

Evolutionary studies of music offer hypotheses why *Homo sapiens* is a “musical ape”. But beyond that? Is the quest for evolutionary origins of music also relevant for our understanding of music as “art” or “entertainment” that we are used to consider as autonomous, as independent from extra-musical functions?

When musicologists analyse a piece of western art music, they describe the structure of a composition and break it apart into smaller constituent elements. ‘Analysis’ in this sense – restricted to form and structure – is distinguished from ‘hermeneutics’, the interpretation of music with respect to extra-musical relations in an historical context.

The evolutionary study of music, however, provides us with a toolbox for a new approach in music analysis which resolves this seeming opposition by understanding structural elements in the context of a biological signalling system and of emotional response.

Tooby and Cosmides (2001) developed the concept of the “functional” and the “organizational” mode of a behavioural adaptation in the context, particularly in the context of story-telling and literature. To give an example: When we protect our partner and children from danger, the functional mode of our adapted mind is in action. But when we face these situations in a book we read, sitting comfortably in a chair, and yet feel the same emotions although we know the situation is purely fictional, the “organizational mode” of our adapted mind is working: the mind processes strong stimuli as a sort of training or playground for real problems we should be prepared for. The good poetic transformation of these topics might be the main secret of literary success.

Let us apply this approach to music: Musical activity in a context of social functions such as mother-infant interaction or group synchronization is a functional mode of musical behaviour. It is not necessarily “art”, but primarily a mode of communication and interaction.

A musical work of art, however, which is *not* produced and performed in a functional context but exclusively made for an audience to listen to it, can cause strong emotional responses as well. The reason we hypothesize:

Any musical product of a human mind is composed of material that is rooted in the behavioural contexts that have shaped the musical mind throughout human evolution. In addition, we have to consider a number of neuropsychological and psychoacoustic universals that are based on perceptual preferences. Finally, physical aspects of performance, particularly the biological signals of the sexually dimorphic human voice have to be taken into account.

This leads us to a tentative checklist (making no claim to be complete) for a toolbox of music analysis in evolutionary perspective:

1. Allusion to basic functional categories

Category	Examples	Signal
Lullaby character	Mozart: Zerlina's aria <i>Batti batti</i> from <i>Don Giovanni</i> . Piano sonata A major KV 311, 2 nd mov.	Intimate bonding, closeness, tenderness, reassurance
Rhythmic chorusing / collective movement	Marches, dance music, popular music with steady beat. Orff: <i>O Fortuna</i>	Synchrony of emotion, mating, group cohesion, cooperation, defense, aggression
Artistic virtuosity	Vocal coloratura; tenors' "high C"; violin music by Paganini, piano music by Liszt	Honest signal, fitness indicator, physical attractiveness
Ritualized speech	Recitative, song, duet, lament	"Making special"/ "artification" of a verbal message

2. Micro-structure with regard to harmonic, structural and temporal preferences

Relation consonance/dissonance

Regular/irregular rhythm

meter and its tempo (preference for 60-120 beats per minute)

motive length (in view of the '3-second-window', Pöppel/Turner 1988)

motive repetition (common device in any music – and typical of ritualized signals)

3. Representation of external subjects

Musical composition as „tone painting“ of evolutionary significant issues and situations.

imitation of natural acoustic environment (by means of instrumentation)

matters of movement: accelerating, slowing, approaching, departing (modulation of *tempo* and volume)

spatial condition: closeness and distance, narrowness and wideness (instrumentation, melodic and harmonic structure)

individual and group: integration, confrontation, exclusion, isolation...(instrumentation, solo/tutti, choir etc.)

4. Physical aspects of performance – in particular: human voice as a biological signal

performance and body presentation (cues of reproductive fitness)

human voice (= sexually dimorphic trait): low male voice as testosterone indicator, high male chest register (tenor) as an honest signal of body control and high performance, falsetto as expression of androgyny; high female voice (soprano) associated with youth, attractiveness and fertility. – Instruments can imitate human voice types!

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Aesthetics: a universal quality of musics worldwide and a biological need

Gerhard Apfelauer

Aesthetical musical judgments may be linked to emotions and partially embodied in our physical reactions. Judgments of aesthetic value can become linked to judgments of economic, political, or moral value. Aesthetic judgments may be based on the senses, emotions, intellectual opinions, will, desires, culture, preferences, values, sub-conscious behaviour, conscious decision, training, instinct, sociological institutions, or some complex combination of these, depending on exactly which theory one employs.

Music aesthetics has been instrumentalised in Europe as a bourgeois instrument of social distinction¹. However, music aesthetics is subjective: Tadday accuses Dahlhaus and Adorno to have a distorted relationship to the subjective side of music, which leads, in his opinion, into a blind alley of music aesthetics, a logocentric objectivity of cognitive value judgements.

The significance of dancing is not only the release of emotions stimulated by music, but also in parallel a social and artistic means of communication. Aesthetic movements of the body and the extremities, body posture and facial expression may express thoughts or social meanings. A special vocabulary of dance is defined in various cultures to communicate similarly to poetic language. Rhythm of music accompanying the dance synchronizes most of the time both artistic expressions. In Western Europe, dance as well as rhythm and rhythmical instruments have been banished historically from the sacral area. Culture has modified dramatically a universal human feature.

There are worldwide significant and objective parameters of music aesthetics, based on subjective judgements. But this subjectivity, most likely, has an evolved biopsychic base. Worldwide and universal signatures in human aesthetics² are described to be

1. Expertise or virtuosity: Technical artistic skills are cultivated, recognized, and admired.
2. Nonutilitarian pleasure: People enjoy art for art's sake, and don't demand that it keep them warm or put food on the table.
3. Style: Artistic objects and performances satisfy rules of composition that place them in a recognizable style.
4. Criticism: People make a point of judging, appreciating, and interpreting works of art.
5. Imitation: With a few important exceptions, works of art simulate experiences of the world, physical or spiritual.

¹Ulrich Tadday: "Musikalische Körper – körperliche Musik. Zur Ästhetik auch der Populären Musik" in Helga de la Motte-Haber (Hrsg.): Musikästhetik (Handbuch der Systematischen Musikwissenschaft Band 1)

² Denis Dutton's Aesthetic Universals summarized by Steven Pinker in „The Blank Slate“, Harvard 2002.

6. Special focus: Art is set aside from ordinary life and made a dramatic focus of experience.

Crafting of art, like composing or playing music is a particular kind of aesthetic human activity that involves both the creativity of the producer and the capacity of others to respond to and make use of the product of art. Without the two parties, producer and receiver, involved a piece of art does not possess aesthetic value.

Ellen Dissanayake describes art as a means of „making special, making memorable“³.

Investigating art – in particular musical art – is investigating behaviour rather investigating artefacts only. Elements of art existed in early human history and got enabled towards the creation of art, because they were inherently gratifying (sensorial, emotional and intellectual), embellishing, outside the daily routine, and not strictly utilitarian, but more than strictly necessary. The artist takes the protoaesthetic elements out of their natural context and domesticates them. The desire to make something special is a biologically endowed (given) need. Dissanayake speaks of „Domesticating the natural“. Art shares the „making special“ aspect with play and ritual. All three are elements tightly related to music and dance.

Aesthetics of music is a philosophy which investigates (not: defines) basic structures of music, basic criteria, relation to other arts and sciences (mathematical and linguistic) as well as regarding its relevance for culture and community⁴.

Universal aspects of music aesthetics seem to be

- musical tensions and relaxation: every culture uses this principle, which was, for a long time in Europe's past, alternation between consonances and dissonances, for Africa tensions being produced by overlay of patterns and sound qualities⁵,
- gamut and scale, respectively intervals which are perceived aesthetically,
- aesthetically effective rhythmical patterns,
- creation and manipulation of expectations,
- the appreciation of competence (not of virtuosity!).

Formal aspects seem to me another universal quality of music aesthetics as well, in particular in absolute and autonomous music, e.g.:

- Sequencing of comparable musical parts (Introduction, Repetition, Modification) are valid in European music as well as for classical music of India and the Arabic world:
- Grouping and contrasts ("horizontal" in music in India or polyphonic music like fugues by Bach) and "vertical", e.g. choral by Bach). Examples for forms in classical music in Europe are *Vordersatz*, *Nachsatz*, *Fortspinnung*, *Epilog*, *Überleitung*, *Reprise*, for the music of India *alap*, *gat* and *jala*, as well as *prakar* (variations of

³ Ellen Dissanayake, *Homo Aestheticus*, Seattle 1995.

⁴ Klaus-Ernst Behne, *Ästhetik*, contribution in MGG.

⁵ Further examples will be given in the long text.

rhythmical patterns, called *tala*). Grouping satisfies aesthetically the holistic, self-organizing tendencies of the human brain, the gestalt perception approach⁶.

- Coherence of musical progressions, like cadences and paths of tonal modulations in Western music, the latter exists in a different manner in Arabic music when changing from one maqam into another.

- Composition based on a few motives and musical themes, especially used by Brahms and his „Entwickelnde Variation“ and by the Eipo in Western Newguinea.

John Kaemmer⁷ proposes an allocation of three different types of musical meanings worldwide. Music has a meaning regarding what it

„says“ (symbolical, referential), denotative: icons bear meanings, or connotative: only perceived by the listener. This deals with symbols, metaphors and metonyms.

„is“ (the non-referential, absolute, autonomous aspects).

„does“ (pragmatic, valuable), more closely related to adaptive culture⁸ than to expressive culture.

In contrast to paintings, sculptures and architectural aesthetics, aesthetics of music and dance pose challenges regarding its post-evaluation, due to the fact, that „appearance of a piece of music is fluctuant, fading“.⁹ Since some 100 years only, recording machines help music and dance to catch up on non-volatility and permit post-evaluation, with similar restrictions like evaluation of visual art, which is the missing ethnological meta information about the social environment of the process of creating art, in particular for art created in the context of rituals.

Philosophically, music aesthetics means the theory of sensorial cognition or - in a broader sense - the sociological theory of music. Empiric aesthetics collects criteria used to decide whether specific persons classify objects to be beautiful or ugly or ascribe some other qualities to them, like funny, grotesque, humorous, caricaturesque. Aesthetics encompasses studies of sensory or sensorial-emotional values, the judgments of sentiment and taste. With this comprehensive approach, aesthetics is definitely a universal quality of music and art as a whole.

⁶ Konrad Lorenz: Die Naturwissenschaft vom Menschen, München 1992.

⁷ Kaemmer, John: Music in Human Life, Austin 1993, pp 108 - 141.

⁸ - adaptive culture: area of ideas, beliefs, values, and customs
- material culture: manufactured objects (buildings, consumer goods)

⁹ Mersmann, Hans: Musikästhetik, Berlin 1926

Visual arts

About the Nature of Beauty and the History of Aesthetics

Christa Sütterlin

The term beauty enjoys the fame of an exclusive, yet undecoded natural mystery that every culture nurses in its own treasuries, whereas aesthetics as a topic with its deep roots of literary tradition appears as a phenomenon that is widely and historically discussed. It seems indeed much easier to grasp the aesthetical approach, since from the beginning it is connected with sensual experiences. The origin of the word traces back to the Greek term *aisthetike* meaning “sensible by perception” and even more: what we evaluate by our senses. The fact, that we evaluate everything we experience and perceive, the ugly, sublime and repulsive as well, contributes to the unrestricted large experimental and semantic base of the aesthetic field. Only some of the sensations for instance are dedicated to the pleasant, and even less of them are approached in art. What might be the selective value of phenomena like „beauty“ as an exclusive kind of human judgment, of „beautifying“ as an adaptive behavior, and of „art“ as a substantial work of high price and estimation?

There is no need to explain the saturating function of visual abundance and opulence in terms of evolutionary benefit. Already the amount of skill and time invested in the making of precious objects witnesses the excess of vital competences of members of a group. Wealth and ornament inspire the feeling of awe and power from early manifestations up to recent ones, and temples and towering churches belong to cultural world heritage of humankind.

Up to our days there is a common sense or meaning in the many definitions found about beauty throughout the different cultures. Besides the affinity to qualities like the good, achieved or beneficial, there is a strong belief in supernatural or super-ordinate effects.

In European thinking as well, the first emphasis of describable (sensual) qualities like smoothness, shine and glamour evolves to what we could call more immanent (cognitive) structural properties. Heraklit speaks of the invisible coherence that binds scattered external phenomena into harmony, Demokrit of „measure“ and „balance“, Plato of „proportions“ and „symmetry“. In general, this power is associated with the Essence of things or the Divine. Beauty for a long period was a property of the objects and formed the spiritual and substantial part of antique cosmology. This remained valid for medieval and even Renaissance thinking as well: only that art appeared now in the service of a personalized God, or the Holy Trinity.

It always exceeded reality by something summarized, condensed, accomplished or outlined.

There was an early germ of critical conscience about the question, how humans are able to seize beauty then, if its qualities are beyond human capacities. Aristotle solved the problem in the vision of an artistic endowment that completed in art the incomplete in nature. For Plato any access to the beautiful was restricted to human mind, in some cases to human memory, while the human senses stay occupied with the sampling of the scattered and „manifold“ (events, items, things etc.). A third route however Plato proposed for mimesis - the emulation of nature - especially in the field of art.

But again: how should humans come to create beauty themselves - by mimesis - if they haven't „seen“ and perceived it? If the notion of beauty referred hitherto to rather abstract properties, the claim for the reproduction of beauty appeals to more concrete measures.

Latest since the notion of mimesis - which concerns art in particular - a persistent dualism between a holistic and structural concept of knowledge and a more passive and subordinate concept of perception becomes evident. And this gap stays as a rationale - and an open question - within the long lasting discussion on aesthetics, the beautiful and the arts in European philosophy. How do wisdom and knowledge come into experience? The answer laid in the hands of epistemology.

Only with the age of early Enlightenment (Empirism and Sensualism) philosophy took the effort to look more closely to what is transferred by our senses. Leibnitz, Descartes, Spinoza etc. still defended the rationalistic credo that only human mind can be the source of knowledge about the world. Empirists however, like Locke, Hobbes and Hume, claimed that nothing comes to our mind that hasn't been in our senses before! The high price for this novelty was: the radical bias for ontogeny. Human knowledge therefore begins with what is taken up and stored from birth. The tabularasa-concept took up its long run up to our days. Humans are what they have experienced and learned. There is nothing like a human nature. The gap remained open.

It was a precursor of Immanuel Kant, Alexander Gottlieb Baumgarten (1714-1762), who inaugurated a first art criticism in a proper sense, and was the first to define the sensual access to the world as a sister-discipline of knowledge. To sensory experience he assigned a genuine package of competences that act like an “analogon rationis”, as intuition, taste, humor, anticipation etc. The term “aesthetics” attained the dignity of a “gnoseologia inferior”, a capacity which contributes to human nature and precedes any information input as an a-priori sensory gift. Kant as well as Goethe and Schiller, referred to Baumgartens work, and the notion of the “beautiful soul” in which sensual and rational impulses (inclination and sense of duty) are in a balance, belongs to the main achievements in the philosophy of the Weimarian classics.

Subsequently perceptual sensory processes became the focus of interest in the natural sciences. The turn was sensible in the field of psychology. Besides association-psychology, which restricted all knowledge to the network of acquired experiences, Theodor Fechner and a new group of Gestalt psychologists analyzed the psychophysical impact of certain formal properties on reactions and sensations of individuals: first steps in a bottom-up-aesthetics! Wilhelm Wundt, professor of philosophy, became the director of the worldwide first institute of psychology, and was also the first to look at prehistoric and non-European art systematically.

The focus on perceptual processes brought about comparisons with mechanical achievements of the time, especially optical ones like the photographic camera. Apparent defects in optical reproduction in the human eye for instance (Helmholtz) turned out to be active functions of visual perception and thus considered as sophisticated performances of the human brain (Hering). A brilliant research about human perception took its course, in which the activity of human sensory mechanisms proved to come much more close to creative processes like the filtering out of disturbing signals, to focus on relevant information and to highlight stimulating features. Perception was found to be behavior-oriented and as creative as the human mind.

What actually resulted from all investigations was, that the human senses provide exactly for the structural and cohesive management of visual and auditory stimulation that was originally assigned to the effects of art and beauty - as effects of objective properties. The concept of beauty laying in the eyes of the beholder was certainly one important outcome, but with a significant difference to all "empiristic" attempts before and after: "the eye of the beholder" is not restricted to the individual eye, but includes sensory neurobiological structures that are part of human nature. And subjectivity is not any more defined by ontogeny only, but to a large extent by phylogenetic adaptations.

Art takes an important part in picturing the world with all the concepts and sensory biases involved by which humans are powered - and therefore promote the process of communication between external and inner world. And art reminds the fact that all perception is a picture of this world and that the very first pictures of it originated in our minds.

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The evolution of artistic expressions – a view from palaeoanthropology

Miriam Noël Haidle

Major problems in evaluating the evolution of artistic expressions are the incomplete materialization and the fragmentary preservation. It is only around 35,000 years ago that undisputable elements of visual art and music occur in the archaeological record; ornaments reach back some 100,000 years. The three artefact groups are nearly exclusively associated with *Homo sapiens*, even if there is also some evidence of aesthetic perceptions in other species of *Homo*. Although artistic expressions seem to be limited to our species, the distribution of the material evidence is rather patchy and appears to be strongly affected by social/cultural factors.

Artistic expressions can be seen as tools for communication, working either in a monologic way referring to the sender him/herself or in a dialogic way directed toward another addressee. These communication tools may support a verbal narrative, they may be used as mnemonic, and they may represent an independent channel for emotional information. Like all cultural representations of cognition, also artistic expressions possess a phylogenetic basis, a historical-cultural component, and an individual part. Different factors within these categories have to concur to produce a cognitive-cultural space that allows art to be developed. Artistic representations are probably neither the mere outcome of one evolved principle of aesthetic perception, nor of several adaptations specific to the different forms of art. Rather, they may be founded on exaptations with only subordinated benefits in natural or sexual selection.

The T-shaped monuments of Göbekli Tepe: posture of the arms

Erika Qasim

In the history of mankind, in the beginning works of art must have been designed in perishable material. Body painting, matting, basket weaving, wood carving and flute making have survived, but we can not give any evidence of very early prehistoric predecessors. Rare objects of "art" in non-perishable material like bone, slate, ivory and the well hidden, well preserved cave paintings have been found – as is usual with archaeological finds: these come to light by chance, and to attempt an outline of the history of the arts is like setting up a criminal case on some random pieces of evidence, scattered over the millenia, not to forget. The picture which so many of the interested scientists try to gain has to fit human habits in any case. Human habits may have been very much the same for all groups of homo sapiens sapiens, but ranking significance and impact on life do change with the eons. From the start, handicraft is one of two segments of human life which will result in artefacts, the other likewise from the start being believed formed for whatever reason, and usually subsumed under "religion".

Pre-Christian times – to speak for the western hemisphere – were dominated by dreaded evils and ills, and people consequently had to keep thinking of remedies. Scientists of animal behavior and human ethology, however, have opened their readers' eyes to a few of the remedies applied resp. applicable with a book titled "In the spell of fear" (Eibl-Eibesfeldt and Sütterlin 1992): female breast presentation, genital display, hand gestures, facial gestures, all performed resp. depicted, in pictures grotesque faces are displayed. Ethnological (behavioural) modern parallels can contribute to typologization.

Before a history of the arts could be tackled at all, setting up a history of the apotropaic would be helpful. The artefacts are the leading evidence. The quality of artefacts in the field of averting evils and ills may range from awkward and clumsy over nice to not uncanny and artful. As a means in driving the evil away clumsiness or artfulness were secondary, the maker's intention and belief was the driving force.

Although the history of apotropaics, of the dreaded doom and of the means of coping with it cannot be written at the moment, contributions do appear in the literature of the religious science, of prehistory and of human ethology. When undertaking a typology of figurines, statues and idols, sorting the finds any scientist will look for the demarcation between pieces of practical character and those of non-practical intention, that is, of expressing ideas.

With the digging campaigns on Göbekli Tepe hitherto unknown works of masonry and sculpture both in megalithic dimensions came to light. The architecture is dated into the 10th and the 9th millenia BC, a dating which makes it sensational. Abstract

monumental sculptures of 5 ½ m height, set up by hunter-gatherers have to be interpreted.

Despite the abstractness it became clear soon that in the sculptures of Gobekli Tepe male beings had been depicted. Rare finds of clearly male depictions – usually guardian figures and other genital presenting small statuettes – were there for comparison.

This led to differ between (1) upright guarding figures (example given: the Urfa statue), (2) crouched male genital presentation, (3) male demons and (4) the T-shaped pillars from Gobekli Tepe. So, typology will include guardian figures with round staring eyes in a face without a mouth, with male signum and hands joined to stress the genital display, then fetal crouched figures with hands on the knees, then demons in the proportions of new born children with grotesc face and oversize male genitals, and finally the T-shaped pillars which do have no face at all, show a special posture of the arms independent from male genital display and despite the size do have no lower legs. There are ten or more of the pillars standing in a circle or oval surrounding two of the T-shaped pillars as center figures in a walled enclosure.

Hands in Priapus-figurines or reliefs can signalize in their own right, they may be lifted, even can hold objects or they rest on the knees or can be joined in the front of the body. In any case the phallic or itiphallic element is central and bent arms, not flexed at 90°, support the central formula. Gestures to ward off evil belong to very old human knowledge. Much later than Gobekli Tepe, the first churches that were built in hostile environment, very frequently do show apotropaic figures on their outside walls (Eibl-Eibesfeldt and Sütterlin 1992). When in later centuries churches were built in Christian environment, they will still be equipped with grotesc faces and breast presenting female busts, repellent gestures and symbols, but the character is no longer as aggressive as in the beginning. It must be noted that stonemasons of all historical periods have known all about the relevant iconography of warding off evil, appeasement und mental state. The excavations on Gobekli Tepe bring finds from a period of established rites, that is a period so to say of guaranteed safety. Figurines and pieces of masonry that were done outside G.T. presumably belong to a later time. In those later periods people had split, villages were separate corporate identities without a landmark centre. The peaceful mythology in the mountain sanctuaries was characteristic of its time. Periods af change, that followed, were in need of different pictures.

The paper could not have been prepared without the excellent seminars held by the excavator of Gobekli Tepe himself in Erlangen University over a period of five years, not to forget the accompanying lectures which always had the brand new fotos from Gobekli Tepe. My thanks go to Prof. Dr. Kl. Schmidt.

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Then the soul is reached

Wolf E. Schultz

Theory

One of the most impressive experiences, after five years of sculpturing, was Hans Arp's marble sculpture „Menschliche Konkretion“ of which I only saw a photograph. Until that time I had mostly produced figurative pieces. I was totally obsessed by this round, powerful “concretion”, radiating, as I felt, an encompassing and compact representation of a female being. Other pieces of Arp, also those I saw in exhibitions, did not touch me so much. I couldn't think of anything else for weeks, was shocked by the effect one single work of a well-known man could have on me. I bought a one and half ton bloc of marble. By working on it with hitherto unknown energy my ability to produce free forms was released like a waterfall. I did not copy Arp's sculpture but found my own way of expression. This experience somehow warned me that I should not get involved in the works of other artists but concentrate on my own feelings and the way they found their expression in oak, stone, steel and bronze.

Motives

My personal life was not easy in these days. I worked through the conflicts in my „atelier“. The source of the conflicts was the source of my artistic energy. The stronger the disruptive experiences were, the more harmonious became my forms. I think, „sublimation“ is a good word to express this. Jung's model of „archetypes“ has always fascinated me. Many of my sculptures are inspired by his ideas, like that of „anima“ and „animus“. Woman-Man, Softness-Hardness, Love-Punishment, Conflict-Resolution, Aggression-Tenderness, Life-Death, Feeling-Acting are concepts expressed in my forms.

The whole world, I saw, was governed by „Angst“. I myself was also infringed by this deep fearful feeling. I decided to dissolve, not to fight it in my work. I gained independence in this way. That was the time I stopped working as an employed photographer and PR-clerk in Hamburg to become a free artist. I learned to let my inner, often unconscious, concept flow directly into the work-piece without interference from „outside“: thoughts, calculations etc. Straight from the brain to muscle.

Tools

This speed is best achieved by the chain saw. It allows the sculptor to create the piece, preconceived in the archaic layers of the mind, in very short time. The quasi-orgiastic act of creation takes possession of me. In this process nothing else should interfere. Since 1970 the chain saw is an important tool in my wood-work. The rest is

achieved with chisels and other classic instruments - each fitting the material and work to be done. I love good tools, have about 90 chisels just for wood and have made suggestions to the company producing them how to improve their quality and durability. One type of chain saw was further developed according to my advice. The physical tools should, I believe, correspond to the inner tools.

The Ethology of the Arts

Why am I producing art? Human ethologists, in contrast to most art critiques, include the recipient of art in their concept of how art became an essential part of the human condition. My work primarily stems from the world within myself. We are *Homo symbolicus*. I get a tremendous amount of reward (and this may well be a biopsychological process) already while I am shaping a piece of wood, stone or metal. Actually, the making of it is more important than the finished product. Of course I am happy when people are looking at my sculptures and I feel that there is some resonance between their own experiences and ideas and my symbolic representations. Especially when older artists are finding words of praise for my work. The viewers, the recipients of my sculptures are the last link of the chain in the artistic process. They complete the work. Is it not a wonderful thing that between them and myself a deep interaction happens, empowered by empathy and emphronesis (Wulf Schiefenhövel's term for "Theory of Mind")? When I have done my work well then my artistic intention goes straight into the soul of the recipient. This may happen in 20 years. But when it happens, it happens with power. Then the inner self of the other is in synchrony with mine: embodied communication, oneness.

Built environment

The ethology of the built environment (EBE): creating school habitats

Johanna Forster

Any form of architecture, in fact any built environment effect perception, behaviour, psychological and physical parameters, as does any natural environmental setting. Structures, forms and colours not only carry an aesthetic, but also a specific semantic meaning and symbolism, and can trigger deeply rooted responses that have evolved through human evolution.

These basic effects have been researched by urban ethologists for 20 years using an evolutionary approach. More recently, research has been done on built settings, in particular on the function and influence of urban public places, school buildings, private homes and work surroundings, with a view to establishing human-friendly spaces. The ensuing results not only give plausible explanations for numerous effects, but also support city planners and architects in their ability to generate environments that answer human needs and optimize human well-being.

Current studies have also investigated school buildings as example of particularly distinct forms of built environments, designed to support learning, communication and achievement. Numerous effects of settings' structural designs have been reviewed and quality criteria of the specific built environment are being developed.

In the following, the classical ethological term 'habitat' will be introduced to discuss school buildings as one example of EBE's research focuses. 'Habitat' covers the physical and structural attributes and qualities of the environment, as well private living surroundings as environments with special functions to the individual, such as the work place. A habitat is researched in terms of its suitability for communication, social behaviour, somatic well-being, and how well it answers human's needs in respect to its special function given. Regarding this, schools are a multifunctional habitat, ideally fostering learning and achievement, social, emotional and communicative development of students. In addition and bearing in mind that today's students spend substantial parts of their daily life and developmental time in schools, the habitat created by a school building becomes a central aspect of pupils' living environment. Accordingly, an adequate structure and design is pivotal.

School buildings are far more than just an outer shell and architectural surround of schooling. Forms, colours, materials, lighting, room structure and design influence the physical and psychological well-being and behaviour of students and teachers in a multitude of ways. Knowledge of such effects provides scope to create and define

criteria on the quality parameters of suitable schools and fuller understanding of how these influence the biological and social needs of people performing 'school'.

Colour design, for example may soothe or stimulate due to direct somatic effects of light's wavelength. Whereas colours on red-orange spectrum are somatically calming, colours of the blue-green spectrum stimulate. These physiological effects are measured by using so-called stress indicators. The narrowness in highly populated class rooms, a major characteristic of today's schools and playgrounds, also affects the somatic well-being. Social density, as Human Ethology defines the phenomenon, may result in children's avoidance behaviour and/or agonistic and aggressive behaviour being overwhelmed by too many social signals given by their peers. Retreat or offensiveness are usual behavioural responses of children not having yet learned to regulate or appropriately cover reactions. Therefore, offering enough available space for learning and interaction is a key quality criterion, and ethological studies offer explicit information.

The inner design covers basic elements for spatial orientation that in turn influences the assessment of a room and in turn effects spatial motion, and so-called motion choreography in response to built structures. At this level, neuralgic spaces in a school's public areas are assembly halls, corridors, entrances, learning areas and play grounds.

Some architectural and structural effects are part of an especially compound stimulus-behaviour interplay of influences. Offering suitable or inappropriate space for learning, working, play activities and prosocial interaction the school's architecture acts as an indirect impulse for complex phenomena such as motivation, communication and even learning performance. This is, for example seen in class rooms where suitable inner structuring of rooms allows multimodalities of teaching and learning.

For more private communication and small group activities further demands are made upon spaces' structure. Humans mostly prefer shelter and areas placed on the boundaries of open places offering both, prospect and refuge. This structural preference can well be observed by looking at buildings and seating structures in public places and even in restaurants. Observational studies on elementary school playgrounds, done with hidden camera, provide comparable data. Results show that in smaller, structured areas children become especially involved in prosocial activities. Accordingly, such space structures are paramount in playgrounds, learning areas and in holding areas or public waiting rooms.

The effects of architectural design and structure are complex and specific situations are influenced by individual aspects, cultural conditions and parameters of the actual situation need to be regarded. However, the EBE's approach and studies reveal a basis

that allows for the creation of quality criteria, useful for any architectural and pedagogical concept of human friendly and suitable school buildings.

Verbal Art

Four revolutions

Joseph Carroll

In 1831, when Charles Darwin set out on his nearly five-year voyage on HMS Beagle, he took with him the first volume, just published, of Charles Lyell's *Principles of Geology*. The other two volumes reached him in the course of the voyage. Lyell's work hanged Darwin's vision of the world, channeled his observations, and helped to transform him from an amateur naturalist into a committed professional scientist. Lyell brought together the speculations and discoveries of the past centuries, integrated them with the idea of gradual minute changes taking place over deep time, and thus produced the lasting foundation of modern scientific geology. That foundation was the necessary precondition without which Darwin could not have developed his theory of evolution by means of natural selection.

The sequence of embedded scientific revolutions that begins with Lyell and Darwin contains two subsequent revolutions, one in the social sciences, and the other in the humanities. The theory of adaptation by means of natural selection was a necessary precondition for creating a biologically grounded psychology; and biologically grounded psychology was a necessary precondition for developing an evolutionary understanding of literature and the other arts.

Darwin's revolution followed hard on Lyell's, but then, an enormous time lag opened up between Lyell's revolution and the revolution in the social sciences. Darwin himself wrote two classic studies in evolutionary anthropology and psychology, *The Descent of Man* and *The Expression of the Emotions in Man and Animals*. And around the turn of the century William James probed the possibilities of a biologically grounded psychology. But then all such efforts abruptly ceased. This story has now often been told—how Durkheim, Kroeber, Lowie and others, striving to establish the social sciences as distinct disciplines, decisively severed all explanatory ties with biology. They had two reasons for this act of secession, one ideological and the other disciplinary. The ideological reason was the wish to affirm that humans, through culture, could shape their own destiny in accordance with humane values, unimpeded by biological constraint. They could thus escape the injustice, oppression, war, inequality, and other such misfortunes that had bulked so distressingly large in their history. The disciplinary reason was the wish to create a conceptual space for categories that were distinctly social and cultural. Though ill-judged and ill-fated, this disciplinary venture sustained its momentum well into the fourth quarter of the twentieth century. It is dying now but is by no means dead. Evolutionists still approach it the way paleolithic hunters, spears at the ready, might approach a mortally wounded buffalo that, though dazed and trembling, could still lash out dangerously with hooves or horns.

Lyell's revolution was consolidated in his own lifetime. Darwin was not so lucky. Serious and troubling questions about the mechanisms of inheritance and about the age of the earth stalled full acceptance of his theory until long after his death in 1882. He had quickly succeeded in gaining reasoned consensus for his argument that evolution—"descent with modification"—had actually occurred. It wasn't until the 1930s, though, that most scientists accepted Darwin's argument that "natural selection" was indeed the central mechanism producing adaptive evolutionary change.

The final two phases in the sequence of revolutionary paradigm shifts initiated by Lyell are still in progress. Robust programs in evolutionary psychology have been established in many major universities but have not yet produced universal reasoned consensus. Ordinary institutional inertia—science progressing one obituary at a time—is part of the reason for delay. But the evolutionists have themselves given grounds for reasoned skepticism. They have not yet developed adequate models of "culture." The idea that genetically transmitted dispositions interact with culture—what E. O. Wilson dubbed "gene-culture co-evolution"—has finally begun to emerge as a usable theoretical framework, but it has not yet produced a rich array of detailed cultural analysis. And there is one further problem: the model of "human nature" most widely accepted in the evolutionary social sciences does not give a good explanation for one crucial element of human nature: the imagination that manifests itself in the arts, myths, religions, and ideologies.

As the instances of Lyell and Darwin suggest, paradigm changes can take place quickly, slowly, or somewhere in between. The paradigm change now in progress in the social sciences falls into the category "somewhere in between." Over the past forty years or so, major changes have taken place in evolutionary theories about human nature, with each change bringing us closer to a comprehensively adequate understanding.

Across the whole spectrum of current evolutionary thinking about human nature, there are thus now three main models: narrow-school EP, broad-school EP, and what I'll call humanist EP. Broad-school EP contains everything narrow-school EP contains but adds general intelligence. Humanist EP contains everything in broad-school EP but adds imagination (figures 2). Imagination can radically modify or even stifle the expression of the most basic human impulses. Working through cultural norms, imagination can affect child-rearing, mating, social interactions within or between groups, and even the instinct for survival. It can make some people celibate and lead others to suicide; compel some populations to bear children without restriction and strictly limit procreation among others; idealize brotherly love or glorify cruelty and brutality; and it can make romantic love the central motive in life or stigmatize it as a foolish self-indulgence that violates the sanctity of the family. Human nature is not infinitely flexible. Every form of human behavior is prompted by some biologically grounded impulse. Nonetheless, those impulses combine in ways that produce behavioral variations wider than those in any other species—wider by orders of magnitude.

Within each individual human mind, all motives are locked into a total system. Change one part of the system—suppress sex, say, or glorify war—and you alter the behavioral output and emotional tone of the whole. Works of imagination—myths, songs, stories, paintings—make this total motivational system subjectively intelligible, illuminating the underlying structures in ways we can sense and feel. We live or die by ideas not because they make good logical sense to us, but because we can feel their emotional force. Works of imagination help us do that.

The imagination brings new things into the world, but those things are not made out of nothing. They are made out of human nature, which includes the imagination. The most mature form of interpretive critique will thus necessarily take account of human nature. And there's a flip side to that coin: the most mature form of evolutionary psychology will necessarily take account of the imagination. All human beings are heavily influenced by the art that surrounds them—by myths, religious beliefs, ideologies, music, stories, poems, films, cartoons, and other products of the imagination. To gain a full understanding of human nature, one must necessarily take the humanities into account. The time is right. For the first time in history, we now have the conceptual equipment necessary to make scientific sense of imaginative experience, assimilating it to the whole, integrated body of our scientific knowledge.

Evolutionary prototypes of literary behaviour

Katja Mellmann

What is writing poems, playing dramas and telling stories seen from an eco-ethological viewpoint? What are the evolutionary origins of 'literary behavior'?

The projected article starts with the assumption that 'literature' (like 'art', 'music', etc.) is not, as a whole, a specific biological adaptation but the product of very complex and instable aggregations of *several* behavioural mechanisms, which are executed in a culturally conventionalised way. For example, some arts make use of our preference for symmetrical patterns, but the evolutionary origin of this cognitive preference is not necessarily found in art contexts but rather, presumably, in mating preferences for indicators of health and wellness or in cognitive rules for information processing.

Other arts make use of our capacity for rhythmic timing, while the evolutionary context of emergence of this capacity might be far from any forms of music, dance, or poetry. The origin of human rhythmic behaviour is indeed unknown. Perhaps it is only a by-product of physical traits in the motor system or brain mechanisms. Or, as it seems to occur in comparable forms among our animal kinship only rarely, perhaps it emerged from a specific selection pressure characteristic to the human species, like the increase in social group size, for instance, which might have produced the necessity of temporal coordination of actions. There are some suggestions for specified behavioural adaptations for rhythmic timing; one of them is the rhythmic accommodation behaviour in male bonding rituals (William H. McNeill), another one the rhythmic interaction in mother-infant dyads (Ellen Dissanayake). It is for those cases that I use the concept of *proto-form* or *proto-type* of art: for the assumed context of emergence (like mating, bonding, or child caring) of an adaptation which later in human history became central to some forms of art (like 'rhythmic behaviour'). To call an assumed paleolithic behaviour a proto-form of art does not mean, however, that this prototype is 'the ancestor' of this or that kind of art as we know it today; it rather means that it was among the (many!) ancestors of art in that it is the ancestor of one of the (many!) *behavioural components* which are optionally employed in art today. Indeed, what today we call 'art' or 'music' or 'literature' seems to rely on a literally *hetero-geneous* multitude of behaviours, as Lorenz Welker, Christian Lehmann et al. have plausibly shown for music, which they consider to involve traits from at least five different behavioural domains.

I take their work as a model when I ask for the evolutionary proto-forms of literary behaviour in the projected article, and I shall gather and discuss existing candidates for such prototypes. In particular, I will follow a hint by Goethe, who once spoke of drama, epic and lyric poetry as of the three 'natural forms' of poetry. The so-called genre triad on the one hand is an invention of the eighteenth century, because before we only have open lists of subgenres. On the other hand, Goethe might have discovered some biological ground in that modern classification of the epical, the dramatic and the lyrical. My supposition, which I will extend in the projected

contribution, is that these three natural ‘classes’ (or, the intuitive plausibility of such a classification) come from the fact that their respective sine qua non condition emerged in separate evolutionary periods. Accordingly, I suggest the capacity for imitation (Aristotle’s *mimesis*) as the sine qua non condition of drama. As the original context of this capacity I suspect social learning, and I shall discuss the question if the premodern poetics of admiration perhaps is a *prototypical* characteristic of drama stemming from this original context. As the sine qua non condition of the epic (Aristotle’s *diegesis*) I will put language. Like I have already argued elsewhere, narrative has probably evolved together with language – *is* language itself, one could also say, at the very beginning – and this probably happened in quite many contexts of emergence, the primary among them perhaps being the communication of social information. The third ‘natural form’, lyric poetry, shall be defined not by its rhythmic character or, more general, its sound quality (its proximity to music, as is often said), but by the capacity for metaphoric articulation. This capacity prerequisites language (or any comparably complex symbolic system) and thus would make the most recent step in a three-step model of the evolution of verbal art.

The way of defining genres that I choose here is akin to that of André Jolles in that he always asked for the ‘typical mental activity’ pertaining to and defining a genre. It is important to add, however, that I understand this typicality in a strictly historical sense, that is, in the sense of an evolutionary proto-typicality. Speaking of ‘natural forms’ of poetry, I do not mean to unravel the ‘nature of things’ but to reconstruct a few particular points in the in the much larger tangle of the evolutionary prehistory of the arts.

Of the emeritive

Karl Eibl

„Art“ is a very imprecise cluster-term with roots in idealistic tradition. All too quickly it hypostatizes a chimaerean ‚essence‘ of art. Setting out to determine the biological part of cultural phenomena one always has to reckon with the possibility that cultural phenomena indeed make use of biological preconditions and underlie biological constraints, but that biological factors are by no means in a one-to-one relationship with cultural representations.

1. I will, therefore, suggest to distinguish at least two tiers. The first one concerns a property which one can, with tolerably good conscience, ascribe to all arts, namely the playful manipulation of inborn dispositions, which is not motivated to serve immediate ends, but by sheer pleasure. This pleasure itself is a product of evolution. It motivates individuals to actions which have no immediate benefit but are indeed useful because they serve the function of exercising and calibrating the respective abilities. Under conditions of culture the proximate mechanisms can be very flexibly manipulated (e.g. by dummies or re-interpretations). These, however, are activities which surpass by far the familiar connotative spectrum of ‚art‘ and also comprise the ‚art‘ of playing football or cards.

2. On this general facilitation of all arts through play, on a second tier different arts are based whose main characteristics are defined in the material they use. Here it is possible to distinguish between semantic and non-semantic elements. Consequently non-semantic activities, like for instance abstract painting or Islamic arabesques, would have to be seen, however, as liminal cases. Eduard Hanslick’s 19th century conception of instrumental music as „soundingly moved form“ without any ‚program‘ belongs, in theory, to this category, but in practical terms a semantic element is of course put into action through the relationship of certain tone sequences and tone combinations to particular modes of sentiment. But the art of dealing with semantic material par excellence is doubtlessly the art of language.

3. Language is a human specific. This does, of course, not catapult humans out of evolution: Also the human ability to speak is a result of biological evolution and there is a playful usage of language which is comparable to human playing with other abilities. It spans from the babbling of infants to the linguistic playfulness of Dadaism. This, as it were, concerns play with the material aspect of language, roughly speaking, the ‚signifiant‘-side. But on the ‚signifié‘-side language can express (because of its representational function) almost everything existing in the world as concept or term and, beyond that, things which do not exist in the world. This is the rational nucleus of what is sometimes, in the name of ‚constructivism‘ inappropriately radicalised: The verbal fixation of facts creates a communal worldview, a big intermediate realm of preformed understanding and ‚knowledge‘ which we call ‚culture‘. When one implies

the idea of play to verbal art then this art is a play which has, in principle, at its disposal the entire culture as ‚material‘.

4. Poetic texts are perceived with the same cognitive apparatus as are non-poetic representations of the world and usually the represented objects correspondent to those which are represented in non-poetic texts. In this way it is trivial that one can find, in the figures of poetic texts, biologically evolved behaviours. If these behaviours exist in reality they of course also exist anywhere in literature. More ambitious is the attempt to detect evolved cognitive schemata as constituents of literature and the horizon of expectations of reception; in this respect research programmes derived from evolutionary epistemology and evolutionary psychology can place the theory of literary forms on new grounds.

5. As specific characteristic of the literary arts I would like to highlight the figurative, non-literal quality of speech. It encompasses an enormous and heterogeneous field of speech; of course metaphor and allegory, but also all other forms of tropic speech: auxesis, parable, irony etc. Fictionality can generally be subsumed under this, as well. Previously, I have tried to identify such modal functions of figurative speech and – semi-seriously - termed its grammatical quality as ‚emeritive‘ (in analogy to indicative, conjunctive...): As mode of speech absolved from responsibility and prima facie freed of Gricean conversation maxims, which must not and does not want to be taken ad litteram, but, nevertheless is not without meaning and function. The broadest usage the emeritive is likely to have as mode of entertaining conversation, the weightless, is the merely playful moving of cognitive content (which, still, facilitates a high degree of emotional sharing - yet void of consequences), from humour to epos. In this context the well known considerations regarding bonding function, handicap-principle and alienation would have to be taken into account.

6. These functions of non-responsible speech can then be joined by elements of a new sincerity: the emeritive makes it possible to also speak about things of which - because of very different, trivial as well as sublime reasons - one actually does not or does not want or must speak at all. To put it briefly: Seemingly non-responsible speech facilitates speaking of the unspeakable, too - of unspeakable body parts, pieces of clothes to the unspeakable secrets of religion which can only be formulated as paradoxical signals of liminality.

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The quest for beauty and powerful expression. Examples from New Guinean poetry

Wulf Schiefenhövel

The products of verbal art, especially when, in written form, they are available for intellectual scrutiny, have long been subject to analyses of the various kinds. Greek and Roman writers, for instance, dealt with essays, poems, historic accounts, religious, political and other texts of their colleagues, competitors, friends and enemies very much like art critiques today. Style, novelty, ideology were among the criteria along which pieces of written and sometimes spoken art (like speeches) were examined. Chinese, European, Arab and other traditions of literary criticism, therefore, exist since long.

Quite new, on the other hand, is the evolutionary approach to understand verbal art. Obviously, it is, like singing and other musical art, dancing, decorative, pictorial or architectural art a universal heritage of humankind. This very simple fact has rarely been mentioned in the history of art criticism, the intellectual dealing with, in this case, the writings of others. Literary analysts are specialists on one or perhaps a few cultures or traditions or periods. A scientist working on Homer's epoi would rarely be knowledgeable in the heroic sagas of African or Melanesian tribes, not even in those of Nordic origin. This points to the fact that dealing with "literature", which does not necessarily require, in my view, the "litera", has always been and still is, a very ethnocentric enterprise. Very much in the vein of modern cultural anthropology, where the singularity of the respective culture is what motivates authors and readers.

Universality is, alàs, not so fashionable these days. Yet, if our aim is, in the course of all our busy scientific undertakings, to understand something about the *conditio humana* (hopefully the *primum movens* of the intellectual's searching mind) then there is, I believe, no better way to look at those ways to perceive, feel, think and behave which unite the different cultures on this earth. And, if once one has accepted universality as an important criterion, then evolutionary explanations are likely (not necessarily though) the ones which can provide solid ground to understand why and how the members of all human societies make art.

My contribution deals with verbal art, unwritten literature, "oraltur" if there were a thing like this, from Melanesia. The inhabitants of this second largest island of the world have arrived at its shores about 50,000 years ago and have lived, for very long periods of their existence, i.e. for tens of thousands of years, in a degree of isolation to which can probably not found anywhere else on our planet. These Papuan societies are the products of a veritable and long-term cultural laboratory and the formerly isolated highland societies are particularly interesting for the anthropologist. Their social structures, their men's houses, warfare, cosmology and religious practices, subsistence techniques (partly based on thousands of years of domesticating plants), their alliance systems, cultural sexual dimorphism, love affairs and forms of symbolic expression have arisen from the archetypical ground of our common human origin.

I will, in this presentation, examine some of the poem-like pieces of verbal art found in this part of the world, especially in the culture of the Eipo (Schiefenhövel, 1976, 1991), members of the Mek group of languages and cultures in the Western/Indonesian half of New Guinea. In 1974, the Eipo, an isolated Papuan ethnic group in the rugged Highlands of West-New Guinea, had a neolithic tool kit and a meritocratic society with horticulture, gathering and hunting as subsistence techniques. They can well be seen as “modern models of the past”. In the course of ethnographic and linguistic fieldwork among them it became apparent that they had a very rich repertoire of orally transmitted verbal art. Not only embodied in mythological accounts, stories and the like (see the monographs of Volker Heeschen 1987, 1998), but, especially, expressed in love poems and lamentations over the death of a close relative.

In these mourning songs the Eipo speak about the unique qualities of the deceased and the fact that the bond to her or him has been irretrievably lost - the *primum movens* of probably all mourning in the cultures of the world. The ductus of these songs follows real crying, probably another universal. The words are carefully chosen and the songs are grounded in rich metaphors - a typical sign of *Animal poeta* (Karl Eibl 2004).

The use of *tertia comperationis* is most striking in the texts speaking of falling and being in love. Women and men cast their romantic feelings in poetry, which usually also takes the form of songs, some of them become “hits” and are sung by members of the community. The structural order and the gripping imagery utilized in these texts are exemplified in the love song created by Oletto who fell in love with a married man and expresses her feelings, drives, thoughts, and longing in a way which is not second to any high quality love poetry in sophisticated literary urban cultures.

Why does *Homo sapiens* do this? Why not express the sorrow of grief and the lure of love in everyday prose? Which are the engines behind the production of texts which create mirrored emotions in the audience (cp. Eibl-Eibesfeldt & Sütterlin 2007)? The author of such poetry achieves a number of possible “goals”: she/he

- can elegantly inform (especially in love songs) the addressee about the own feelings;

- demonstrates, on the stage of the village square, his/her intellectual, creative, emotional, social, and artistic competence, thus advertising her/himself as attractive mate (in the classic Darwinian paradigm of sexual selection);

- can regulate the volcanic nature of the underlying emotion by transforming it into poetry; this leads, in a positive feed-back, I believe, to a heightened sensation of the feeling - this seems to be important for the formation of a well-functioning brain (cp. Johnson-Laird & Oatley, 2008, who speak of “understanding” emotions better through art). Tooby and Cosmides (2008), on the other hand, speak of down-recalibration necessary to reintegrate the individual into society.

- makes the case, the occasion, the experience “special” (Ellen Dissanayake 1992), i.e. meaningful also for the others in the group, thereby contributes to the inner condition of the community.

A number of proximate mechanisms will play a role in facilitating the production of verbal and other art which, in the evolutionary past at least, lives of beauty and powerful expression.

For a foreigner to a culture like that of the Eipo it is by no means impossible, not even very difficult, to understand vital elements of their cognitive concepts and their symbolism - as one is made to believe if one takes the original version of the Sapir-Whorf hypothesis for granted. On the contrary, our common origin and our common equipment with brain functions, psychological and cognitive modules produce forms, structures and symbolisms which an anthropologist from a completely different part of the world has little problems to grasp. Knowledge of the local language is, of course, essential for such enterprise, even more important is the assistance of local teachers. That they, true stone-age intellectuals themselves, exist and, even more astounding, that they would not only be willing but keen to interpret their world and their art for us is another, very impressive sign of universality: humans are *Homo discens* and *Homo docens* and they look for and are fascinated by the power of beautiful words and that of convincing symbolism, by stories about the extraordinary and by lyrics which elicit tears and laughter.

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