

## ИСКУССТВО И МОЗГ

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## ART AND BRAIN

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Why does the brain produce art? What are the influences of the brain onto the art production? How do biology and psychology jointly form art? How does the art reflect the self perception of the artist?

The task of the brain is to produce an image of the outer reality which (usually) allows reasonably coping with it. Each living creature depends on keeping a balance of its bodily functions, if not, it dies. While in plants the direct contact from cell to cell is enough to assure the distribution of water and nutrition, animals already at the level of the first multi-cell organisms began to develop a nervous system as a coordination system for the tasks needed for survival. In the beginning this was very primitive and just there to assure the supply with oxygen, water and food. With evolution progressing, its tasks expanded: Sex for the preservation of the species, stable body temperature, breathing, hormonal systems, just to mention a few, they all depend on a central regulation.

Human beings so far have the most elaborate nervous system. Headed by the brain, its activity has become so complex, that we have gained a consciousness and define ourselves as humans largely by the results of the brain's activities. Consecutively the main criterion for the death of the person is the end of all brain activity.

While most of the numerous the brain functions never become conscious to us, some tasks demand purposeful actions and at least depend to some extent on conscious decision making. Finding water, food or sex-partners implies active behavior in the world we live in.

By means of the hormonal systems the brain realizes imbalances which result in sensations like hunger, thirst or sexual lust and strongly demand actions to reinstall the original balance. We have to actively drink to quench our thirst and maybe even do something to find water to start with (Personally I love the strategy of the Kalahari bushman in the Jamie Uys film "*Animals are Beautiful People*": He catches a baboon, feeds him with salt and then lets him sit and wait for hours bound to a tree. The next morning the poor animal is so thirsty, that when the bushman lets it free, it non-stop runs to its hidden source of fresh water leading its torturer to it). Also finding food can depend on various more or less creative activities, not to mention the satisfaction of our sexual desires.

At some point the increasing complexity of thinking resulted in an expansion of its tasks beyond simply securing the basic physical needs. Fantasy and with it a psychological reality evolved. Even though inevitably linked to the body, the psychological system developed needs on its own. Without external stimuli, without mental nutrition, we cannot exist.

Imagine you are offered a job where the only thing you have to do is: nothing. In exchange you receive a generous salary. Would you say no? Sounds tempting, doesn't it? Canada, 1954: Long lines of people were waiting outside to be able to participate in a psychological experiment which exactly demanded of them to do nothing. They just had to rest in bed with their hands and legs loosely tied and their eyes focused on the ceiling. Foods and drinks were served as desired, and at any point in time they could resign.

Most of the participants took the chance to sleep. When they woke up again, they started to sing or whistle after a while. Or they started talking to themselves. After a couple of hours they began to feel discomfort. Even though it meant waving their salary, the first ones stepped out. Those who stayed within 24 hours all began to hallucinate. The experiment had to be terminated prematurely. The participants who stayed until the early end were not able to resign themselves, they all were acutely psychotic. (Hacker, 1971, p. 179) Deprived of external stimuli our psychological balance is disturbed as is our physical balance without food and water.

A similar example can be found in medieval history: In the thirteenth century the emperor Frederic the Second was in search of the inborn language of humanity. He had newborns raised by nurses who were not allowed to speak to the babies. But instead of starting to mumble words in Hebrew, Greek or Latin as expected, all babies died within a short period of time. So it is not just unspecific types of arousal our brain depends on, instead our psychological wellbeing needs social contacts, human relationships.

As we could see, not only a severe deterioration of our physical stability leads to death but also a massive disturbance of our psychological demands. As a result suicide is the eight most common cause of death in human beings, in the age group between 15 and 24 it is even rated second. In the United States alone, each year 30 000 people commit suicide, that is one in every 18 minutes. (Andreasen, 2001, p. 553) But what evolutionary benefit do we get from a brain that makes us dependent and creates an enormous risk for survival?

A tremendous one! The organism's capacity to adapt to an ever-changing world was multiplied and sped up almost indefinitely. Our dependency from outer stimuli is the basis of our ability to learn and therefore to adjust ourselves apart from the classic biological laws of mutation and selection. But that is not all. When language was introduced step by step the learnt knowledge could be passed on to the next generations, even more so with the invention of writing. Recently the internet has created a pool of information accessible to everyone and unlimited in time and quantity.

If we consider all that, is it then still a surprise, that one of the constant constructive processes in the brain is art? If constant production is the way the brain works, is it then not more surprising, that within all the creative overflow, still (most of the time) the outcome also includes an image of the outer world that sufficiently resembles it to assure the survival in it.

But brain activity alone, does not yet create art – I resist from giving proof to this statement, the dear reader may be well aware of them. The knowledge which was created by a generation also needs to be passed on to the next to be accessible for transformation. Cold-blooded animals lack that ability – reptiles live without culture – which was only developed in warm-blooded creatures. Only their

brains have special areas, which are sensitive to hormones like cortisol, which directly affect the activation of genes and therefore the development of certain traits, so that for example stress leads to an emotional reaction and a learning process which through changes in behavioral patterns then is passed on onto the next generation. The capacity to adapt no longer depends on the rare chance of a beneficial mutation but directly is able to react to environmental changes.

Because of this enormous advance in adaptability, it is thanks to our brains that humans live in the most diverse surroundings, be it the jungle near the equator, the jungle of our cities, a remote island in the South Pacific, a high mountain region in the Himalaya or the icy world of the pole region. Even more so, people are able to adapt to situations which at first glance seem unable to cope with. They adjust their behavior to roles like that of torturer and prisoner (Zimbardo, 2007), to that of slaughterer and martyr and tend to pass these perverted roles on to the next generations (which is one of the mayor likely causes of the perpetuation of wars and homicide in some parts of the world).

The deep rooted effects of transmitted thinking in the creation of societies and within it onto its art can lucidly be observed in Christian medieval art, which was inevitably dominated by religion. Medieval art had to serve Christianity. Tradition demanded this self limitation of content and style until renaissance revolutionized the perception of the world and liberated art from its tight boundaries.

Strangely enough in recent years Christian fundamentalists in Western societies intend to turn back the clock and reintroduce the dominance of religious belief onto their societies and cultures by implementing a so called "intelligent design" concept according to which there supposedly is scientific evidence of a planning power (a god) behind the evolving beauty of evolution.

In his recent book "*The God Delusion*", Neo-Darwinist author Richard Dawkins sums up contrary arguments. For example he states that the non-existence of a god cannot be proved, but neither can the non-existence of flying teapots or spaghetti monsters in space, claiming that it is not assumptions but scientific methods which define science. He also presents a list of the crimes that were committed in the name of faith to support his antireligious agenda. Furthermore he

states that also without the creation of a fictional "god" the world can be explained from a scientific point of view including the evolution of moral guidelines for human interactions. He considers religion a by-product of evolution which according to him is transmitted like a virus between people (Dawkins 2006).

In my view, Dawkins is right, yet his arguments are not new and often somewhat superficial. I doubt that the simplification he gives is able to explain the deep roots of human religious needs. I prefer to understand religion from a psychoanalytic point of view linking it to scientific evidence of our psychological development: Once we become self perceptive during our early years of life, we start to ask existential questions. As the answers to those inevitably have to remain frustrating, we have created the phenomenon of a god to try to explain the unexplainable. Consecutively it is not a coincidence that the image of god evolved parallel to the evolution of the psyche and to the evolution of societies. The early gods were part of nature explaining things mankind did not understand like lightening and other natural phenomena. On the next level gods were transformed into a family which had obvious parallels to ordinary family life – or doesn't the Zeus family remind you of Denver Clan?

Parallel to the process of psychological integration which any child goes through in normal development, also the concepts of god then became more integrated resulting in the single patrimonial figure of monotheism. Again this new one and only god reflected the circumstances of its creators. The early Jewish god was as dangerous as was the everyday life of the Jewish people. Dawkins provides us with a shimmering caricature: "The God of the Old Testament is arguably the most unpleasant character in all fiction: jealous and proud of it; a petty, unjust, unforgiving control-freak; a vindictive, blood-thirsty ethnic cleanser; a misogynistic, homophobic, racist, infanticidal, genocidal, filicidal, pestilential, megalomaniacal, sadomasochistic, capriciously malevolent bully." (Dawkins 2006, p. 191 )

Later in the New Testament the god concept gained kindness and then was linked to a pantheistic experience of unity with the universe. At the same time human emancipation allowed the option to fully abolish the need for a god, as Woody Allen put it in his film

"*Scoop*": "I was born into the Hebrew tradition, but when I got older, I converted to Narcissism."

Parallel to the psychodynamic development of each individual psyche (in societies where a high level of psychological integration has been reached) religion underwent fundamental changes as did the creation of art, both embedded in the progress of the joint wisdom of mankind which still is by no means evenly distributed to date (resulting in different concepts in different societies and even within them to explain the world).

But in addition to those learnt traditions that reflect themselves in the art, are there also biologically inborn traits? Do we have artistic genes?

At this point it is certainly too early to answer this question. Also the existence of certain genes does not guarantee that they are necessarily activated. (Thomashoff, 2009) Yet, first results make it likely that there are some genetically determined inborn esthetic priorities all human beings share.

"Symmetry is beautiful." Psychiatrist Manfred Spitzer tells us why: "A symmetrical body is a healthy body. This rule not only is in force in humans, but also in animals. The reason for it is simple: Infections, parasites, deformities and other illnesses of the body most commonly are not evenly affecting both arms, legs, eyes or ears. Illness, whatever its cause may be, therefore commonly leads to asymmetry."(Spitzer, 2007, p. 111)

Cultural history, especially the abundant heritage of classical architecture, states proof for this observation from the natural sciences. But still there are other factors of beauty than symmetry alone. One may relate to Freudian concepts of round forms or other characteristics of gender, or one may take a stroll to the shopping malls of our cities to observe how shiny objects attract the eyes of many of our fellow citizens – an effect which obviously is not limited to tribal cultures which gave away precious belongings in exchange for some glittering glass pearls. The mental root of this sometimes disadvantageous behavior may likely be our dependency from water. Stone Age people had to search for water with their eyesight in the savannas they lived in (I mentioned the still fashionable Kalahari strategy earlier on) and were not like for example cats able to sniff it. Similarly

we are attracted by light, by the shining flames of the warming fire (which may be linked to the other humans likely to be encountered nearby), unless its dimensions are threatening (burning disasters).

Due to our social nature (exceptions like ICD 10: F21 do not undermine that rule) our eyes tend to wander to any live object, the more human, the more attracting it is (not necessarily attractive). Other eyes are like magnets to our own visual system; our attention is immediately drawn towards them. Anything resembling a human being or another live object is in the center of our perception. This is even stronger in baby schemes. Inevitably we sympathize with anything that resembles an infant, yes, even with cars, although any rational thinking would contradict that. Carmakers like Volkswagen (Beetle) and Mazda (Schuster, 1997, p. 94) without hesitation make use of our weak spots.

Key stimuli force their power upon us. We react like a warbler with a baby cuckoo in his nest – the bigger the stimulus the more we adore it. For the little warblers this means jumping over the edge of the nest (because the baby cuckoo's bill is brighter); for us the consequences vary. Usually they are linked to our basic needs, to food or sex. Art psychology (Schuster, 1997, pp. 84-105) has collected the evidence of those traps of our perception, which still await being likely linked to some genetic source some day ahead. We hardly resist oversized breasts, legs, eyes, shoulders etc.

We can assume that all these influences also find their way into art. Yet, the characteristics that decide whether we like a work of art or not, tend to be rather simple. In order to appeal to our taste, we need to recognize some familiar aspects in an artwork (which makes it dependant on our artistic education) and at the same time we want to be surprised by something new.

Interestingly enough this "law of art taste" has been proven in animals as well: "A vervet monkey and a chimpanzee were given dyes with colorful ornaments. They were allowed to choose some of them to play with. They preferred regular forms (avail or radial symmetry) over irregular ones. Also the color preference of the animals followed certain aesthetic criteria. After a few turns the monkeys and apes tended to switch their color of choice, as do people following the trends of fashion." (Schuster, 1997, p. 81)

Taken this into account, it will no longer surprise us that some artists reach their fame long after their death. Van Gogh's stylistic inventions depended on the acceptance of impressionism to make their pictorial complexity understood and have their individual language of beauty integrated into the context of the art historical ideal.

It is not culture alone that creates its impact onto the oeuvre of an artist, which also becomes visible in the following phenomenon: A brain has to mature, leading to stylistic phenomena in certain ages. When my three year old daughter is drawing a person, she tends to focus on the head and then add legs and arms. The skipping of the trunk of the body is typical for her age. Curiously enough this basic stylistic oddity is characteristic for the art of children aged between two and four, but it is also found in tribal art as well as in the drawings of severely ill psychiatric patients, mainly those suffering from chronic schizophrenia and dementia. Consequently we seem to be confronted with a minor observation leading to major assumptions. Obviously the head-and-foot person reflects a developmental stage of the psyche, respectively of the brain. Given the fact that early cultures produce the same stylistic features as young brains, there must be a parallel between the evolution of psyches and the evolution of cultures. On the other hand the fact that psychiatric illness results in a transformation of thinking processes (visible in the drawing style) resembling those of children can be seen as an evidence of the regressive potential of certain psychiatric conditions. (Kraft, 1997, pp. 271-280)

Despite all these biological influences mentioned, art is not simply an inborn capacity. It has to be elaborated by the cultural tradition it is developed in. Yet even then it is not culture alone, but also the life experience of the artist apart from his or her artistic training which leaves traces in the art. Just on the basis of the given biology and the stored biographic experience the artist starts to interact with the culture.

How subtle the psychodynamic influence on an art can be, the oeuvres of several artists especially those from expressionism clearly reveal. As an example you may compare two self portraits of the German expressionist Ernst Ludwig Kirchner from 1926 and 1917 representing the highly changing self perception of the artist due to a



narcissistic personality disorder he suffered from and which was major cause of his suicide in 1938 (Thomashoff, 1997).

After thus having also focused on the various non-cultural aspects which influence the creation of a work of art, the last remaining question is: How does an artwork become recognized as such and how does it become integrated into the temple of appraised art history? The answer is: It is the same rules of interwoven biological, psychodynamic and cultural influences that lead to its creation, which also determine the interpretation and with it the attributed artistic value to a work of art.

As an anecdote goes, Andy Warhol once was asked by a young artist, what he should do to get onto the cover-page of Andy Warhol's influential art magazine, which would have made him an imminent success. The simple answer was: "Sleep with me."

Usually it is not that easy to explain the course of an artistic career. More commonly it is different strategy that opens the gate of the temple of fine arts. An artist whose individual psychodynamic connects with the stylistic tradition of the culture he is in creates an oeuvre in which his subjectivity reaches out to an inter-individual level and transcends towards meaningfulness for society. This does not necessarily have to coincide with the artist's intention. For example the German Ludwig Meidner (1884-1966) in 1912 painted apocalyptic scenarios of burning cities and people in panic which later were interpreted as visionary intuitions of the upcoming disasters in the First World War.

Similarly art brut was not accepted within the frame of the concepts of art until Dubuffet and others integrated its stylistic particularities into the field of the fine arts resulting in a reciprocal acceptance of previously rejected artworks. They were not created within the tradition of the academic art, but the tradition changed and incorporated what had been brought to life outside of its former boundaries. Nowadays the drawings from the Prinzhorn Collection, the paintings from Aloïse and many more have entered museums and the art market on an equal level as others. Nevertheless these evolutions of traditions do neither progress evenly within a society nor between different societies. Another anecdote may reveal this: A bathtub which had been filled with grease and other things by Joseph Beuys

(1921-1986) was laboriously cleaned by an eager cleaning woman who then faced charges of destroying a highly valuable work of art.

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