

EVOLUTIONARY AESTHETICS

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Organized by

Eckart Voland (Zentrum für Philosophie der Justus-Liebig-Universität Gießen)

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Program

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Prospects and Limits of Evolutionary Aesthetics – Two Evaluations:

Kurt Bayertz: Critical Comments

Abstracts

No abstract available

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The Role of Evolved Perceptual Biases in Art and Design

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Since Darwin's initial development of the theory of evolution by natural selection, anthropologists, biologists, and psychologists have been inspired to consider this construct as a possible explanation for some facets of human behavior, including the creative process. Further development of this construct included issues of physical attraction, social communication, and aesthetic preferences. The aim of this presentation is to review the evidence for evolved perceptual biases in humans and other species as a way of shedding light on processes of aesthetic expression in the visual arts and design. Little is known about how these perceptual biases are translated into aesthetic solutions and the few empirical studies of creativity in the visual realm are wrought with definitional and methodological problems. One method of developing experimental questions for empirical study of aesthetic phenomena is to review the sources of natural selection that are likely to have shaped the perceptual capabilities of extant primates and the putative hominid ancestors of humans. Studies of social and antipredator behavior reveal two major sources of natural selection - the assessment of the intentions of both conspecifics and predators and the assessment of habitat properties for organizing appropriate behavior. One of the oldest sources of selection involves the recognition of facial features useful for determining a facing orientation. The eyes and mouth provide the salient cues for this capability by perceivers. Recognition of two facing eyes as a potential threat occurs independently of a facial surround, in part, because partially concealed ambush predators were forced historically to reveal their eyes to prey in order to monitor their activity. Evidence that the mouth and eyes are perceived independently from the facial surround comes from studies of inverted faces and the Thatcher illusion with its grotesque expression of "biting intention." Canines, which are used aggressively as slashing weapons during conspecific fights and opportunistically during antipredator mobbing, diminish markedly in size in the hominid fossil record, roughly coincidental with the earliest appearance of stone tools in the late Pliocene with sharp edges for cutting, stabbing and piercing. Studies of physiological arousal, gaze aversion, and passive avoidance behavior indicate that humans are sensitive to eye-like and canine-like shapes. By the late Miocene, the earliest bipedal hominids were capable of traversing segments of wooded grasslands with shrubs and trees radiating dangerous

thorns, a context which provided an additional source of selection for the recognition of sharp, piercing shapes. Together, eye-like schemata and scimitar- and thorn-like shapes are displayed conspicuously by masks used for social and religious purposes; they are prominent in 20th-century art derived from Cubism, and sharp-looking contours occur frequently in the biomorphic styling of architecture and product design.

In addition to encountering thorny plants, our hominid ancestors had to find drinking water on a daily basis, and the search for water would have required the detection of moisture in soil and pools of water partially occluded by vegetation. Thus, a strong source of selection has been consistently present for the assessment of glossy and glistening surfaces. Preference for wet-looking surfaces is seen in the mouthing of the shiny objects by nursing-age toddlers and the positive aesthetic preferences of adults for the glossy and glistening surface finishes of fabrics, jewelry, consumer products, and buildings. Aesthetic preferences for repetitive textures might have their origins in the detection of leopards, pythons and venomous snakes, some of which are innately perceived as threatening by inexperienced macaques, vervet monkeys, and ground squirrels. The ubiquitous use of spots, crosshatching and tessellation as decorative patterns spans the Upper Paleolithic to modern times, prompting the need for empirical study of their provocative properties.

Beyond Classicism versus Constructivism: A Multiple Fitness Analysis of Variations in Grooming

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Traditional approaches to aesthetics attribute beauty either to classical, universal qualities, or to socially constructed, arbitrary qualities. As an alternative to both positions, the Multiple Fitness model specifies certain dimensions of physical attractiveness, including neonate, sexually mature, and some expressive features, that appear to be universally desirable, and other dimensions, especially grooming and self-adornment behaviors, that appear to vary substantially from culture to culture, and across time within a given culture. The model further stipulates that a portion of the variation in grooming behaviors is attributable to status competition and the desire for novelty, whereas other aspects of grooming can be linked to ecological dynamics. The heuristic value of the Multiple Fitness model is illustrated in a review of current research on the impact of such ecological variables as sex ratios, economic prosperity, father absence, and attachment style on female dress length, female slenderness versus curvaceousness, the display of male facial hair, body-building, and tattooing.

Bodies in Motion: Attractiveness as a Kinetic Signal

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"From the invisible atom to the celestial body lost in space. Everything is movement...it is the most apparent characteristic of life: it manifests itself in all functions. It is even the essence of several of them."

Etienne-Jules Marey (1839-1904)

Traditional approaches to the research on what constitutes attractiveness and its relation to human mate

choice basically rely on the presentation and ratings of static two-dimensional stimuli. Usually such approaches explain only a moderate amount of variance in what male and female observers describe as the attractive features in a face or a body. Real life situations differ in many circumstances from such a static visual perception. Body and face and even the observer are constantly in motion, thus presenting bodily and facial features from various angles. Such a dynamic perception of attractiveness has not yet been taken sufficiently into account in attractiveness research. Moreover, if presentation of stimuli in real world is a dynamic phenomenon, then the dynamics of a moving body itself might be a part of attractiveness ratings.

From an evolutionary point of view constructions of bodies and faces, which promise optimal energy consumption, physical efficiency and optimal reproductive capacities should be attractive. Up to now research has shown that at least three parameters play a crucial role in the perception of attractiveness: symmetry as a marker of developmental stability, averageness as a potential marker of heterozygosity and sex hormone markers which advertise optimal sex hormone profiles for intra-sex competition in males and reproduction in females. All three components are supposed to be at least partially a result of a host-parasite coevolution.

In this talk I will theorize that all three parameters are also motion parameters, which are more prominently visible in body kinetics themselves than what an observer could derive from static assessment of various body features which create the movement. Asymmetry in a body can influence motion to a high degree and asymmetry could even be more visible when a body (or face) moves and find its expression in movement quality. Averageness of a body or face – when viewed as the basis for sex prototyping – could represent a sex-prototypical body with its features representing optimal sex-specific motor capabilities. Finally research of the recent years has clearly demonstrated that sex-hormones influence body movements in both sexes. We thus hypothesize that movement is one of the key variables determining the attractiveness of a person. In other words, we perceive attractiveness of other people not only through static facial features, but also through dynamic features e.g. their gestures, their way of walking and especially their individual body movements. When viewed from a greater distance the static features such as symmetry per se of the face or skin texture are hard to spot. Movements would provide the perfect means to signal attractiveness over greater distances.

In order to analyse the quality of body movements we developed a new technique for digital movement analysis. In the first study walking behaviour and perception of sex was analysed, and we were able to show that neural networks which were trained for sex-recognition from body movements were as good as human observers in deciding if the walking person was a male or a female. Moreover the classifications of the neural network on a male-female continuum showed surprising results. Males were classified with higher male ratings, when more female observers were around and females were rated as more "female" when they were near the point of maximum likelihood of conception. In a second experiment we analysed dancing behaviour of males and females. For a rating study the individual information was removed from the movies, so that only the body movements could be used as a source for information. Attractiveness ratings from body movements alone showed high inter-rater concordance. Regarding the correlations of movement qualities and ratings, one obvious gender difference was found: Men seem to transfer information through movements of the lower body, whereas women seem to transfer information through movements of the upper body. Men and women were rated more attractive and erotic the bigger the sweep of their movements were. Additionally, women appeared more attractive and erotic the slower and less complex their bodies moved. The results of the present studies reveal that the patterns of movement qualities contain information about sex prototypicality and attractiveness of an individual. It could be shown that the former neglected dimension of nonverbal behaviour – the quality of movements – is worth a closer look in the future. Additionally, we want to emphasise that the research of attractiveness must take into consideration that a more global and until now unnoticed kinetic features that underlie the well studied static features.

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The Aesthetics of Nature in Pictorial Art

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Art and aesthetics are generally perceived as events of purely cultural provenance. But many of its essential features are rooted in specific adaptations of human and even pre-human perception. General and species-specific biases provide selective factors for aesthetic perception and art. Even cultural diversity and the evolution of styles fulfill important functions in the promotion of group-competition and bonding. The representation of nature in human artefacts allows a more substantial view on specific adaptations in the perspectives of history and cultural change.

Do Women Have Evolved Adaptation For Extra-pair Copulation?

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Women's EPC is a fundamental behavioral component of the human mating system. That women's EPC may be a threat universally to men's paternity confidence is evidenced in men's sexual jealousy across all societies. This evidence ranges from men's emotion of jealousy itself to a rich diversity of cultural institutions such as female sexual modesty and claustration (Wilson and Daly 1992, Thornhill and Thornhill 1987, Dickemann 1981). We have emphasized that the widespread occurrence of women's EPC is not evidence for EPC adaptation. Men's nipples and the human bellybutton are also widespread but both are incidental effects, not adaptations. Men's sexual proprietariness is the phenotypic stamp of female EPC being a powerful and effective selective force on males in human evolutionary history. Yet this evidence that females engaged in EPC during human evolutionary history is not evidence that women possess EPC adaptation. Similarly, neither the widespread occurrence of EPC in birds and even in gibbons, which like humans are a great ape, nor the evidence that females of some species of pairbonding birds have EPC adaptation is evidence that women have EPC adaptation. The widespread occurrence of women's EPC now and historically, given its potentially high costs stemming from lowering paternity reliability of the main partner, leads to the theoretical expectation that past selection will have fashioned EPC adaptation with design that gives EPC behavior when its benefits exceed its costs to reproductive success of females in ancestral settings. This hypothesis about the expected past selection for historically adaptive female EPC predicts that women will possess EPC adaptation. Support for the hypothesized historical selection is evidence of a feature(s) in women that has specialized function for EPC. If functional specialization for EPC is not present in women, then EPC must be by-product, an evolutionary outcome of indirect selection. Given the frequency of EPC in women, which rules out mutation alone as EPC's ultimate cause, and its complexity and other costs, which rules out drift as ultimate cause, women's EPC must ultimately be explained by direct or indirect

selection. Functional specialization rules out by-product hypotheses (and drift and mutation alone) because functional specialization is a co-ordination between a trait's organization and achieved function. It is very unlikely that such coordination will occur by chance. Standard statistical procedures test whether hypothesized coordination is real, i.e., not explicable by chance.

Aesthetic Preferences in the World of Artefacts — Adaptations for the Evaluation of "Honest Signals"?

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This paper explores the possibility of whether the functional logic of costly signaling theory could perhaps explain the evolution of aesthetics in the world of human artefacts. There is some confirming evidence for this view. First of all: Only what is costly is perceived as being beautiful. This applies, of course, only when taking the biological currency of costs into consideration, namely life effort. Whenever resources, vitality and time are spent, life and reproductive opportunities are being drawn upon, and this triad of biological costs constitutes the beauty of artefacts.

Second, beauty communicates the sociobiological qualities of those who have invested in the production of beauty. Here we are dealing with a triad of messages, including information on genetic qualities, social competitiveness and moral integrity. What these messages have in common is that their core information is not so obviously recognizable. "Good genes" can not be seen; the power and strength of political protagonists can only occasionally be perceived. And moral integrity can not only not be seen, but it is even unlikely a priori, in a world of personal benefit maximizers. Therefore, all three messages require proof of their substance and provide costly signals – which alone due to their mere existence document hidden qualities of the signaler.

Signalers have a vital interest in reaching an audience to whom they can show their hidden qualities. Signalees have a vital interest in learning about the hidden qualities of their social partners, because they are seeking the best possible sexual mates, highly potent "Machiavellists" as patrons and solidarity partners who are reliable. Simple, non-redundant and economically rare emblems with messages, such as "I am fit, strong and morally good" were unable to evolve because a naive, untested acceptance of socially motivated information would be highly risky for signalees, since the interests of signaler and signalee are not identical. Therefore a detector which checks the signaler's personal statements about his or her quality is advantageous for signalees. And precisely this function is fulfilled by aesthetic judgment. It assesses "honest signals" about hidden qualities. Even in the world of artefacts, aesthetic preferences appear to have the same function that they have always had in the world of natural features, namely as aids to orientation for decisions in sexual and social affairs.