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Why Do Human Perceptions of Beauty Change? The Construction of the Aesthetic Niche

Why do humans, in almost every culture in the world, invest so much time in search of beauty and so many resources in the beautification of their bodies, natural objects, and surroundings? What is beauty, and does a universal standard of beauty exist?

Over the last two decades, these questions have been the subject of renewed interest and attention from scholars in both philosophical aesthetics and empirical sciences. There is research which claims that when people are asked what constitutes a beautiful landscape, they almost always focus on the same few biologically salient elements—water courses, scattered trees, and wide horizons, for example (Orians 1992). However, recent neuroimaging studies show that even very different perspectives on beauty trigger the same networks in the brain, suggesting that an unequivocal, universal characterization of beauty is difficult (Vedder et al. 2015). At first glance, aesthetics and empirical science couldn't seem to be farther from each other, yet both approaches shed light on what constitutes beauty, and the human experience of it.

In this paper I argue that a *biological* theory—namely, niche construction theory—may better help us to understand how aesthetic standards flourish and evolve within human societies and cultures. In so doing, I hope to move beyond the opposition between natural and cultural definitions of beauty and provide a set of useful conceptual tools to address universality and relativity, and the objectivity and subjectivity of the human aesthetic experience.

Cultural Niche Construction

Beauty is a multifaceted concept, a *unitas multiplex*. Despite its many elements, our species tends to agree on the attractiveness of certain basic features, which is largely a result of evolutionary constraints on our cognitive or perceptual systems. This is likely why, according to neuropsychological studies, we are predisposed to symmetric forms and contours and why we are innately attracted to other humans' faces—because by

focusing on symmetrical features, we can more easily make sense of what we see, hear, or experience. Babies in particular tend to find human faces more attractive than other types of visual stimuli since it may improve their chances of survival; they are still vulnerable at this stage and require parental care and protection. Within these basic cognitive and biological constraints on beauty and attractiveness, however, I argue that a significant part of what we experience as beautiful is the result of a reciprocal, constructive relationship between us and our physical, biological, and cultural environments: an *aesthetic niche* construction process.

Niche construction is the process by which organisms simultaneously shape and are shaped by their ecological environments, at various levels. Beavers with their dams, earthworms with their burrows, and bowerbirds with their nests—all are examples of niche-constructing animals. Niche construction processes include the interaction of three basic factors: environmental modifications as a result of an organism's actions; a subsequent alteration of the (evolutionary) pressures acting on the niche-constructing organism; and the transmission of these modifications over generations in the form of *ecological inheritance*.

Although the first formalized articulation of niche construction theory dates back to no more than a couple of decades ago (see Odling-Smee et al. 2003), Charles Darwin had already begun to explore its core concept at the end of the nineteenth century. What's more, Darwin seemed to be aware of an intriguing relationship between what would later come to be known as niche construction theory and the aesthetic domain. In the last paragraph of his book *The Formation of Vegetable Mould, through the Action of Worms* (1881), while describing the ways in which earthworms construct their own niche, Darwin writes: "When we behold a wide, turf-covered expanse, we should remember that its *smoothness*, on which so much of its *beauty* depends, is mainly due to all the inequalities having been slowly levelled by worms. It is a marvellous reflection that the whole of the superficial mould over any such expanse has passed, and will again pass, every few years through the bodies of worms" (my emphasis). A thought-provoking link is drawn here between a niche-constructing species—earthworms—and the beauty of the English fields. Earthworms construct their niche through castings and excretions, actively shaping the English landscape, leveling its rough irregularities and slowly transforming them into smooth surfaces. In doing so, they contribute to the construction of what Darwin, as a nineteenth-century

English gentleman, finds beautiful (smooth) in the English countryside. Is this a natural beauty, or not? And what does "natural" mean (as opposed to "cultural"), in the context of a niche construction process?

Compared to processes such as Richard Dawkins's extended phenotype, niche construction theory places additional emphasis on the role played by acquired characteristics in transforming selective environments. This is particularly relevant to human evolution given that we humans—the most spectacular niche-constructing species—have been constantly altering our selective environments through (acquired) cultural practices since our emergence as a species. In a cultural niche construction process, one or more culturally acquired traits (such as the introduction of a new farming method, or the development and spread of a new set of religious norms) can affect the evolution of other biological or cultural traits by altering the environment in which they evolve, with a feedback action from "culture" to "nature" and vice versa.

The Evolution of Aesthetic Inheritance

Aesthetics and the arts have contributed impressively to the transformation of our physical, cultural, and social environments. Humans cannot help beautifying and ornamenting their bodies, tools, houses, and surroundings (Dissanayake 1992). We live in a highly "aestheticized" world, with an ecological inheritance that today includes architectural works and monuments in our cities, designer objects in our homes, art museums, fashion trends, artistic and aesthetic practices and performances in everyday life, and tools and resources that facilitate (intentionally or unintentionally) the learning and transmission of aesthetic and artistic traditions across generations.

Furthermore, our aesthetic experiences and our appreciation of the arts have coevolved with the active "aestheticization" of our environment. For instance, the spread of linear perspective in western European painting has coevolved with our ability to appreciate it since at least the sixteenth century. Linear perspective (itself a "cultural" trait) became largely accepted as the most "natural" (and therefore beautiful) way to represent three-dimensional objects on a two-dimensional surface. Similarly, western European culture now considers mountain and winter landscapes to be "aesthetically significant," whereas these might have been judged differently only three or four centuries ago.

Figure 1: Neanderthals from the site of Krapina, Croatia, may have manipulated eagle talons to make jewelry 130,000 years ago, before the appearance of modern humans in Europe. Photo by Luka Mjeda, Zagreb (CC BY-SA 3.0)

Over the course of evolutionary time, our aestheticized environment has been exerting a sort of feedback action on us, with the emergence—among other effects—of new selective pressures. Indeed, it has been documented (mostly on the basis of paleoanthropological evidence from contemporary hunter-gatherer societies) that soon after they developed and spread in human populations, works of art, aesthetic practices, and rituals began to be used as sociocultural tools for individual recognition—strengthening collective identity and ostracizing strangers. To share a particular aesthetic heritage became a sign of commitment and belonging to the community, and a means of distinguishing (or "selecting") one's own community from other groups, particularly as human populations became larger and more extended (fig. 1). One of the reasons for the proliferation of so many different standards of beauty and aesthetic norms, documented by anthropological and ethnographic research, may lie in this dual desire for cohesion, on the one hand, and for distinction, on the other hand. According to some scholars, the emergence of an aesthetic sense and the spread of artistic practices among human populations may have played a role in driving the evolution of the human brain in general, and of the human faculty of language in particular (Dissanayake 1992).

Moreover, as the British anthropologist Alfred Gell (1998) has suggested, drawing on research into contemporary populations in Papua New Guinea, the beautiful objects that humans create and assemble, and with which they surround themselves, seem to exert a powerful influence (or "pressure") on the members of the population. It is as if these things were living persons and not just passive objects: "works of art, images, icons, and the like have to be treated [. . .] as person-like: that is, sources of, and targets for, *agency*" (Gell 1998, my emphasis). As objects, artworks are able to captivate and enchant their audiences, influencing their thoughts and actions, fascinating and persuading them, behaving as actors in the social system. This is no less true for us in our

modern societies than it was for the indigenous population of Papua New Guinea described by Gell. Just as the beautiful, richly decorated prows of the Trobriand Islands canoes fascinated and even dazzled their Polynesian spectators, winning them over in commercial transactions (one of Gell's most famous examples, see fig. 2), it is not uncommon for us today to be similarly captivated by a work of art, allowing it to influence our thoughts and feelings. The piercing gaze of one of Rembrandt's self-portraits, the elaborate architecture in an El Greco painting—these act on us as if they were living persons, not canvases. They affect our thoughts, decisions, intellectual and material resources, and power.

Figure 2:
Canoe prow from Papua New Guinea, probably the Trobriand Islands.

Within the aesthetic/artistic niche, family structure, social group, and cultural and geographical circumstances seem to determine and influence the development of individual aesthetic tastes and preferences, at least to a certain extent. Even before they come into the world, human babies are exposed to the standards of the sociocultural niche they are embedded in, and they are actively influenced by their parents' choices and preferences. They receive an *aesthetic inheritance* from their parents and forebears, which shapes—though not in a deterministic way—their future aesthetic approach to the world. What's more, because these acquired aesthetic practices, traditions, and values are handed down from generation to generation, they often appear to be "natural." In other words, the cultural memory of the creation and development of aesthetic standards, behaviors, and rules is frequently lost or weakened, or (perhaps epigenetically) assimilated (see Portera and Mandrioli 2015).

Conclusion

For the past few decades, it has frequently been suggested that evolutionary theory cannot easily be integrated into the human sciences: First, because human scientists are more interested in human behavior and cultural processes than they are in genes (indeed, the modern evolutionary synthesis has long focused primarily, and almost exclusively, on genetics); and second, because philosophers and human scientists consider the adaptationist accounts of many evolutionary psychologists too reductionist to be seriously taken into account (see Laland and Brown 2006; Davies 2012). Niche construction theory seems to provide a viable alternative to this incompatibility. It places an emphasis not only on genes, but also on (cultural) niche-constructing behaviors and their feedback action on biological evolution. It further provides an effective framework for conceptualizing the mutual relationship between *organisms* and their *environments*, thus undercutting the old dichotomy between nature and nurture, biology and culture (Fox Keller 2010). In recent years, cognitive scientists have convincingly demonstrated that human cognition and experience develop in strict interaction with the environment in which humans live: Our mind is *embodied* and *embedded*—it extends into our bodies, environments, and niches, actively shaped by them and shaping them in turn. This is especially true of aesthetics, whose norms, traditions, and standards of beauty depend on the ecological circumstances in which humans live and act.

As biologist Kevin Laland writes, social and human scientists, philosophers, and aesthetologists "do not need to be told" by ecologists and evolutionary biologists that "humans build their world," which for the most part includes their aesthetic standards and norms. However, human and social scientists may "feel more comfortable with a conceptualization of evolution that [. . .] has an emphasis that aligns with their own thinking" (Laland and O'Brien 2012). I couldn't agree more.

So, why do we, as humans, not have just one standard of beauty? Aesthetic and artistic behaviors, preferences, and habits are neither completely *given* at birth nor encoded in our genome; rather, they are the hybrid result of a mutual interaction between humans and their multifaceted world.

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