

## Beyond the nature-culture dichotomy: a proposal for Evolutionary Aesthetics

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### 1. *Habitat choice and physical attractiveness*

According to evolutionary psychologists (Barkow, Cosmides, Tooby [1992]) the inherited architecture of the human mind is a result of the evolutionary process. Over generations and under the pressures of natural selection, *Homo sapiens* has developed species-specific psychological modules that have made it able to survive and reproduce. Among the several adaptations with which evolution has carefully endowed *Homo sapiens* there are aesthetic preferences for a certain type of habitat or for sexual partners who have this or that specific feature. These preferences, evolutionary psychologists claim, are universal, species-specific, and highly adaptive. A large and heterogeneous collection of studies composes today a standard model of Evolutionary Aesthetics (EA) focusing on the mechanisms of choice and preference – both sexual and environmental – that would be mainly based on «species-specific prejudices of aesthetic perception» (Eibl-Eibesfeldt [1984]). Almost all contemporary evolutionary research on aesthetic behaviour focuses today primarily on identifying and describing aesthetic preferences as basic processes of perception that have acquired in the course of human evolution a significance for their adaptive and reproductive relevance.

Almost twenty years ago evolutionary ecologist Gordon Orians ([1980], [1986]) championed the so-called «savannah-hypothesis», according to which humans have evolved preferences for habitats with features characteristic of the African savannah, the environment in which lineage of the genus *Homo* is supposed to have originally flourished. A number of studies seemed to demonstrate that a preference for savannah-like places is universal and not culturally dependent. In one of these studies, Orians and Heerwagen ([1992]; see also Falk [2010]) asked subjects from different countries and cultures to evaluate photographs showing different types of trees, varying in four features: canopy shape, canopy density, trunk height and branching pattern. Results

seemed to show a substantial agreement among the participants in selecting the savannah-like form of tree. Contemporary *Homo sapiens'* most preferred habitat seems to be one having «high resource-providing potential», the presence of water, «scattered trees», a «low, grassy ground cover»: in a few words, a habitat in which survival and reproductive chances are the highest, as it was – we presume – for our ancestors in the Pleistocene African savannah.

According to evolutionary psychologists natural selection has also provided *Homo sapiens* with adaptive *aesthetic* preferences for the choice of sexual partners. In his worldwide famous handbook on *Evolutionary psychology* David Buss writes: «Evolutionary logic leads to an even more powerful set of expectations for universal standards of beauty. Just as our standards for attractive landscapes embody cues such as water, game, and refuge, mimicking our ancestors' savanna habitats [...], our standards for female [and male] beauty embody cues to women's [and men's] reproductive value» (Buss [2005]: 147). A considerable amount of literature has been published on this topic in the past three decades, suggesting that over the course of evolution *Homo sapiens* has evolved standards of beauty directly correlated to the fitness value of the opposite sex.

The younger and healthier a woman (or man) appears, the more beautiful she (or he) is judged, evolutionary psychologists claim. The reason is rather obvious: a young and healthy woman has much more reproductive value than an old and unhealthy one. Signs of beauty are therefore: such traits as full lips, clear and smooth skin, clear and brilliant eyes, long and high-quality hair, long legs, facial symmetry and so forth. The body fat distribution is another important cue to attractiveness: studies have suggested that women with a low «waist-to-hip-ratio» – between 0.67 and 0.80 – are judged to be more attractive than women with a higher one. Just as for the other cues, a low waist-to-hip ratio is correlated with youth and health and proves that the girl is not pregnant. As far as female preferences for males are concerned, women seem to judge more attractive tall and muscled men, whose face is highly symmetrical and masculine-looking. The reason why highly masculine-looking men are preferred seems to consist in the fact that the level of masculinity is directly correlated to the level of testosterone, a hormone that, if produced in high levels, can compromise the immune system. The more masculine a man appears, the healthier he is supposed to be, given that he can physically afford to produce such a large quantity of hormone. These constituents of beauty «are neither arbitrary nor culture bound», remarks David Buss ([2005]: 149). Any member of the species *Homo sapiens* (man or woman), everywhere in the world, is supposed to find attractive people showing the cues described above.

In another major study, Langlois, Roggman and Reiser-Danner [1990]) found that human newborns share with adults the same standard of male and female beauty: exposed to

different types of faces, newborns gaze longer at attractive faces than at unattractive ones, and the faces they seem to find attractive are the same as those that adults choose. The results of this study prove, on the one hand, that preferences for facial attractiveness emerge very early in human development and, on the other hand, challenge the current idea that standards of beauty in our species are gradually learned through exposure to contemporary cultural models. It seems, on the contrary, that they do not require any kind of training or education to emerge in children. Evolutionary psychologists propose that these standards are universal and innate.

The majority of studies just mentioned, about environmental and sexual preferences, is questionable – and has been questioned, at least from a methodological point of view<sup>1</sup>. However, this is not our point here. *Rather*, we focus on the idea of the relationship between *nature* and *culture* that these studies, inspired by the EP programmes, convey. Evidently, even the most «motivated» among evolutionary psychologists have to concede that accounting for human aesthetic preferences is not always so easy. Not all the preferences that humans possess seem to be universal or innate. On the contrary, most of the preferences that lead us in our everyday life (food preferences, music preferences, dress preferences) are the result of processes of social learning and of the exposure to cultural models (Jablonka, Lamb [2005]; Jablonka, Avital [2000]). We cannot account for them by merely appealing to genetic inheritance or to innate psychological modules: rather, we need to take into account the influence of culture.

Now, the point is that, even if evolutionary psychologists concede that culture plays to some degree a role in the development, consolidation and transmission of preferences among humans, they typically tend to interpret culture as if it were a second, independent dimension of variability merely – we would say: «superficially» – added to the universal and species-specific «natural» dimension («evoked culture»). We will argue that the EP and standard EA way of understanding the relationship between nature and culture – *nature* being innate and universal and *culture* being acquired, local, and contingent – is not the best way to try to explain the development of *aesthetic* preferences and, more in general, the development of the aesthetic attitude and behaviour in humans.

Some suggestions in this sense come from the works of Charles Darwin, the father of the theory of evolution by means of natural selection.

<sup>1</sup> Criticism has been expressed about the psycho-evolutionary studies concerning human environmental and sexual preferences, in particular about their methodology. We refer the readers to Buller (2005); Eldredge (2004); Ruso, Renninger, Atzwanger (2003); Dupré (2001).

## 2. Darwinian instincts. Beyond the dichotomy

Charles Darwin was much more cautious than contemporary EA scholars in interpreting human aesthetic preferences as if they were adaptations carefully shaped by natural selection, innate, universal and species-specific. In the *Origin of Species* he writes: «How the sense of beauty in its simplest form – that is, the reception of a peculiar kind of pleasure from certain colours, forms and sounds – was first developed in the mind of man and the lower animals, is a very obscure subject. The same sort of difficulty is presented, if we inquire how it is that certain flavours and odours give pleasure, and other displeasure» (Darwin [1876]: 162).

As known, the book in which Darwin develops his aesthetic theory is *The Descent of Man and Selection in Relation to Sex*, published in 1871. There, Darwin illustrates «aesthetic choice» as a powerful engine of sudden and unpredictable change in the structures of the species, an alternative to natural selection. This is a very crucial point: according to Darwin, the development of a sense of beauty in nonhuman and human animals is not to be ascribed to natural selection, but rather to what he called sexual selection. These two evolutionary forces are profoundly different: sexual selection depends «not on a struggle for existence, but on a struggle between the males for possession of the females; the result is not death to the unsuccessful competitor, but few or no offspring» (Darwin [1859]: 88).

In the third part of *Descent of Man*, Darwin reviews the different ideas of beauty in human cultures to demonstrate how these different ideas influence – through sexual selection – the bodily structure of the genus *Homo* and the evolution of some of its physical characteristics.

Being that «sexual selection depends on such an uncertain element as taste is», aesthetic choice must be a major driver of sexual dimorphism and the variety of secondary sex characteristics (Menninghaus [2003]). Presence or absence of hair, shape of the head, colour of the skin are to ascribe to the choice made by sexual partners: regularly an arbitrary choice, not necessarily based on adaptive reasons, that spreads in the population oft thanks to social learning processes and imitation.

Referring to hundreds of cases reported by travellers and naturalists from the four corners of the Earth, Darwin demonstrates how the perfectly round heads of the inhabitants of Cochinchina, the buttocks of Hottentot females, the extremely fair complexion of the Yuracaré people, and the extraordinary length of head hair in several North American tribes represent the result of generations upon generations of aesthetic choices. A similar explanation is given for behaviours that appear without a fitness utility, such as the stretched lip and ear piercings of the Bocotudo people or the Maori tradition of tattoo.

Darwin poses the question of the heritability of these aesthetic preferences. Although he never addressed the matter in published works, we can glean some important clues from his *Notebooks* written in 1838-1840. Notebooks *M* and *N* evidence how Darwin related the matter of aesthetic behaviour with the gradual development of human intelligence on the basis of animal instinct (see Bartalesi [2012]). Here the British naturalist presents a theory of instincts (explicitly inspired by Hume) that acts as a background in front of which a reflection on human aesthetic behaviour takes place (Barrett et al. [2009], M 104).

Instincts are – according to Darwin – sedimentations of archaic preferences, past choices nested in the physical memory of the species but obscure to its individuals, like a mark in the brain. In *Notebook M* he writes: «When a muscle is moved very often, the motion becomes habitual & involuntary – when a thought is thought very often it becomes habitual & involuntary»; «An habitual action must some way affect the brain in a manner which can be transmitted» (M 46).

On this basis we can interpret Darwin's mysterious note «Beauty is instinctive feeling, & thus cuts the Knot» (M 32), in *Notebook M*, as the affirmation of the dependence of our aesthetic judgements on the instincts that have gradually sedimented in the natural history of our mind. «I should think» – Darwin writes – «great principle of liking, was simply hereditary habit» (N 87). He returns on this topic in *Old and Useless Notes about the moral sense*: «Our tastes in mouth by my theory are due to hereditary habit (& modified & associated during lifetime), as in our moral taste» (NMS 50). Aesthetic judgements are therefore the active expression of «instinctual emotions», the hereditary effect of archaic trains of ideas on the structure of the body, permanently linked to pain and pleasure perceptions<sup>2</sup>. The act of preference, binding and instantaneous, emerges – as any other physical characteristic – from the same evolutionary laws of variation and heritability. This is why – for Darwin – our aesthetic judgements are in the shape of «an almost instantaneous perception» (NMS 50) and our tastes have at the same time the unjustifiable urgency of an ancestral taste and the variability of a trait acquired by experience.

<sup>2</sup> Neuroscientist Steven Brown, in Brown et al. (2010), comes to a similar conclusion regarding «aesthetic» as positive and negative evaluations in certain regions of the brain. Darwin of course did not know the neurobiology. Furthermore, the term «instinct» is nowadays not so used as it was earlier for Darwin and for the early ethologists, e.g. Nikolaas Tinbergen. Contemporary neuroscientists prefer to use the term «predisposition» and suggest that we might think of certain predispositions as almost automatic.

As a guarantee of the historical and cultural origin of taste, Darwin introduces an evolutionary relationship between authentic taste – that which obeys the instincts acquired during evolution – and «fashion» – that which depends on cultural habits developed during life and the natural tendency of any animal species to look for novelty<sup>3</sup>. It is only in the relationship between these two moments of taste that Darwin sees the evolutionary law of aesthetic ideals (or, we could say, «aesthetic universals»). As a species gradually diverges from another on the basis of small variations, authentic taste acquires the small mutations that happen during the life of individuals up to the moment in which it mutates into another aesthetic standard. At this point in time a new idea of beauty establishes itself as a gradual evolution of the previous instinctual configuration.

Darwin finds thus a very peculiar relationship between nature and culture: choices made on the basis of fashion, depending on cultural habits developed during life, gradually transform themselves into nature, that is to say they impress themselves in the brain as a heritable trace.

### 3. *From Darwin to contemporary Evolutionary Biology*

Summing up, while evolutionary psychologists – whose perspective currently prevails within the field of evolutionary aesthetics – conceive sexual and environmental preferences (in a word: *aesthetic* preferences) as innate, universal and species-specific, a sort of «universal basement» compared to which cultural differences are no more than superficial accidents, Darwin claims that some cultural preferences can be «impressed», generation after generation, in our brain thanks to its extraordinary plasticity, and become heritable. What is originally a cultural trait (that is, a result of social learning or imitation) can be turned, over the course of evolution, into «nature», and what is a natural feature – or innate, instinctive – can be transformed in a «cultural feature» (neither necessary nor universal, rather accidental and contingent), as is the case when a new instinct, result of the «fixation» of new habits, replaces an old one.

One of the greatest challenges facing today's philosophers of art and, in particular, those who wish to explain the evolutionary origin, development and role of aesthetic preferences, deciding if they are innate or acquired, universal or local, necessary or contingent, is precisely to clarify how we must conceptualize the relationship and interaction between *nature* and *culture*.

<sup>3</sup> N 28; Darwin (1871: 64-65). See Menninghaus (2009).

As shown by Jablonka and Lamb (2005) and clearly highlighted by Oyama, any account of gene-culture evolution using «the model of trait transmission for culture as well for biology, seeking to remedy the shortcomings of purely genetic theories by adding a second transmission channel» (see for instance the model proposed by Boyd and Richerson [2005]), continues «the dualistic tradition that ensures those shortcomings» Oyama [2000]: 69). The account of the development and spread of aesthetic preferences proposed by evolutionary psychologists, trying to avoid genetic determinism (untenable, if applied to the case of human aesthetic preferences as a whole) by adding a second, cultural dimension of variability to the universal and species-specific ground, runs into this «dualistic» kind of mistake. We doubt that the origin and development of aesthetic preferences can be explained by referring to genes alone, in interaction with «evoked culture» as a second transmission channel (therefore understanding culture in a very shallow sense). We also doubt that human aesthetic preferences can be reduced to a mere matter of cultural differences (in opposition to «universal nature»), because some very «basic» preferences seem indeed to be universally shared (such as the attraction to human faces and voices, shown even by few-days-old newborns). Even if the model proposed by Darwin is poor in some respect (especially as he advocates a «Lamarckian» form of transmission for instincts, which has obviously turned out to be false), we claim that his conception of a chiasmus between culture and nature offers a valuable clue: it suggests that attention be paid to the dialectic interaction between nature and culture, and to the multiple manners in which the one transforms the other and is eventually transformed into it.

This is the theoretical direction that the most advanced research in evolutionary biology has recently taken. The theory of niche construction, one of the main topic within the so-called Extended Evolutionary Synthesis<sup>4</sup>, is a first step in this sense, showing how organisms, through their choices, their preferences, activities and metabolism, can shape their environment and alter the selective pressures to which they are exposed, also passing this modifications to the next generation. In our species, *Homo sapiens*, cultural evolution has extraordinarily amplified this widespread ability to shape the environment and modify selective pressures. The transmission of aesthetic preferences, as is well known, does not necessarily follow a vertical pattern of descent: criteria of beauty spread in all directions, among the components of a population and even beyond its boundaries. Thanks to the most recent developments in evolutionary biology, we know today that in biology, too, the transmission of traits does not necessarily imply vertical descent and, furthermore, does not necessarily imply a genetic

<sup>4</sup> See Pigliucci, Müller (2010); Odling-Smee, Laland, Feldman (2003).

mutation or DNA alteration: the horizontal transfer of genes, on the one hand, and the epigenetic system of inheritance, on the other hand, have radically broadened our conceptions of inheritance and transmission of traits through the generations. In the last few years a growing number of scientific studies have focused on the ways in which a proportion of parental epigenetic modifications (including epigenetic modifications related to smell and food preferences, for instance, in a certain sense *aesthetic* preferences) can be transmitted from parents to their offspring.

In a recent paper Leder and Nadal wrote – with specific reference to experimental aesthetics – that one of the greatest challenges facing experimental aesthetics today is «the need for integration [of psychological aesthetics] with the neurobiological and *evolutionary* perspectives on art and aesthetics, forging a *true* cognitive, neuro- and *evolutionary* science of aesthetics» (Leder, Nadal [2014], emphasis added). We think that something similar is also true for contemporary EA: we need today to provide the discipline with a solid and rigorous theoretical, epistemological and methodological framework, taking into account the most advanced results in evolutionary biology and getting rid of the main misunderstandings that have for too long dominated the discussion in EA, because of its contiguity to standard EP. This paper, attempting to rethink the ancient dichotomy between nature and culture, also providing Darwin-inspired alternatives to the traditional understanding of nature/culture relationship by standard EP, is a first step in this direction<sup>5</sup>.

#### Bibliography

- Andersson, M., 1982: *Female choice selects for extreme tail length in a widowbird*, "Nature", 299, 28 October, pp. 818-820.
- Barkow, J., Cosmides, L., Tooby J. (eds.), 1992: *The Adapted Mind*, Oxford University Press, New York.
- Barrett, P. H., et al. (eds), 2009: *Charles Darwin's Notebooks, 1836-1844: Geology, Transmutation of Species, Metaphysical Enquiries*, Cambridge University Press, Cambridge.
- Bartalesi, L., 2012: *Estetica evoluzionistica. Darwin e l'origine del senso estetico*, Carocci, Roma.
- Boyd, R., Richerson, P.J., 2005: *Not By Genes Alone: How Culture Transformed Human Evolution*, University of Chicago Press, Chicago.

<sup>5</sup> A detailed discussion of some of the new and most advanced lines of research in Evolutionary Aesthetics, «*towards an Integrated science of aesthetics*», is in this issue, section «Notes and reviews», by Mariagrazia Portera.



- Brown, S., Dissanayake, E., 2009: *The arts are more than aesthetics and aesthetics is more than the arts: Neuroaesthetics as narrow aesthetics*, in M. Skov, O. Vartanian (eds.), *Neuroaesthetics*, Baywood, Amityville (NY).
- Brown, S. et al., 2011: *Naturalizing aesthetics: Brain Areas for Aesthetic Appraisal Across Sensory Modalities*, "Neuroimage", 58, pp. 250-258.
- Buller, D.J., 2005: *Adapting Minds. Evolutionary Psychology and the Persistent Quest for Human Nature*, The MIT Press, Cambridge (MA).
- Buss, D.M., 2005: *The Handbook of Evolutionary Psychology*, Wiley, London.
- Changeux, J.-P., 2002: *L'Homme de vérité*, Odile Jacob, Paris.
- Coss, R.G., 2003: *The Role of Evolved Perceptual Biases in Art and Design*, in E. Voland, K. Grammer (eds.), *Evolutionary Aesthetics*, Springer, Heidelberg.
- Cronin, H., 1991: *The Ant and the Peacock: Altruism and Sexual Selection from Darwin to Today*, Cambridge University Press, Cambridge.
- Darwin, C., 1859: *On the origin of species by means of natural selection, or the preservation of favoured races in the struggle for life*, John Murray, London..
- Darwin, C., 1871: *The descent of man, and selection in relation to sex*, John Murray, London.
- Davies, S., 2012: *The Artful Species: Aesthetics, Art, and Evolution*, Oxford University Press, Oxford.
- Desideri, F., 2011: *La percezione riflessa. Estetica e filosofia della mente*, Raffaello Cortina, Milano.
- Desideri, F., 2013: *On the epigenesis of the aesthetic mind. The sense of beauty from survival to supervenience*, "Rivista di estetica", 54, 3.
- Dupré, J., 2001: *Human Nature and the Limits of Science*, Oxford University Press, Oxford.
- Dutton, D., 1998: *America's Most Wanted, and Why No One Wants It*, "Philosophy and Literature", 22, pp. 530-543.
- Edelman, G., 1989: *Neural Darwinism: the theory of neuronal group selection*, Oxford University Press, Oxford.
- Eibl-Eibesfeldt, I., 1984: *Die Biologie des menschlichen Verhaltens. Grundriß der Humanethologie*, R. Piper GmbH & Co., München.
- Eldredge, N., 2004: *Why We Do It. Rethinking Sex and the Selfish Gene*, W.W. Norton, New York.
- Endler J., Basolo A., 1998: *Sensory ecology, receiver biases and sexual selection*, "Trends in Ecology and Evolution", 13, pp. 415-420.

- Falk, J.H., 2010: *Evolutionary Influence on Human Landscape Preference*, "Environment and Behavior", 42, 4, pp. 479-493.
- Guilford T., Dawkins, M.S., 1991: *Receiver psychology and the evolution of animal signals*, "Animal Behaviour", 42, pp. 1-14.
- Jablonka, E., Lamb M., 2005: *Evolution in Four Dimensions: Genetic, Epigenetic, Behavioral, and Symbolic Variation in the History of Life*, MIT Press, Cambridge (MA).
- Jablonka, E., Avitale, E, 2000: *Animal Traditions: Behavioural Inheritance in Evolution*, Cambridge University Press, Cambridge.
- Langlois, J. H., Roggman, L. A., Rieser-Danner, L. A., 1990: *Infants' differential social responses to attractive and unattractive faces*, "Developmental Psychology", 26, pp. 153-159.
- Leder, H., & Nadal, M., 2014: *Ten years of a model of aesthetic appreciation and aesthetic judgments: The aesthetic episode – Developments and challenges in empirical aesthetics*, "British Journal of Psychology", pp. 443-464.
- Menninghaus, W., 2003: *Das Versprechen der Schönheit*, Suhrkamp, Frankfurt am Main.
- Menninghaus, W., 2009: *Biology à la mode: Charles Darwin's Aesthetics of "Ornament"*, "History and Philosophy of the Life Sciences", 31, 2, pp. 263-78.
- Miller, G., 2000: *The Mating Mind: How Sexual Choice Shaped the Evolution of Human Nature*, Anchor Books, New York.
- Mithen, D., 1998: *The Prehistory of Mind. A Search for the Origins of Art, Religion and Science*, Phoenix, London.
- Odling-Smee, F.J., Laland, K.N., Feldman, M.W., 2003: *Niche Construction. The Neglected Process in Evolution*, Princeton University Press, Princeton.
- Orians, G.H., 1980: *Habitat selection: General theory and applications to human behavior*, in J. S. Lockard (ed.), *The evolution of human social behavior*, Elsevier, Amsterdam.
- Orians, G.H., 1986: *An ecological and evolutionary approach to landscape aesthetics*, in E.C. Penning-Rowsell, D.Lowenthal (eds.), *Landscape Meanings and values*, Allen and Unwin, London.
- Orians G.H., Hervageen J.H., 1992: *Evolved Responses to Landscapes*, in J. Barkow, L. Cosmides, J. Tooby J. (eds.), *The Adapted Mind*, Oxford University Press, Oxford.
- Oyama S., 2000: *Evolution's Eye: A Systems View of the Biology-Culture Divide*, Duke University Press Books, Durham.
- Pigliucci, M., G.B. Müller, 2010: *Evolution. The Extended Synthesis*, The MIT Press, Cambridge (MA).

- Portera, M., 2013: *Estetica della contingenza. Exattamenti e pennacchi tra biologia e filosofia*, in L. Russo (ed.), *Premio nuova estetica, Aesthetica*, Palermo.
- Richards, R.J., 1987: *Darwin and the Emergence of Evolutionary Theories of Mind and Behavior*, University of Chicago Press, Chicago.
- Richards, R.J., 2005: *Darwin's Metaphysics of Mind*, in V. Hosle, C. Illies (eds.), *Darwinism and Philosophy*, University of Notre Dame Press, Notre Dame.
- Ruso, B., Renninger, L., Atzwanger, K., 2003: *Human Habitat Preferences: A Generative Territory for Evolutionary Aesthetics Research*, in E. Voland, K. Grammer (eds.), *Evolutionary Aesthetics*, Springer, Heidelberg.
- Schaeffer, J.-M., 1992: *L'art de l'âge moderne. L'esthétique et la philosophie de l'art du XVIIIe siècle à nos jours*, Gallimard, Paris.
- Tooby, J., Cosmides, L., 2001: *Does beauty build adapted minds? Toward an evolutionary theory of aesthetics, fiction and the arts*, "SubStance", 94/95(1), pp. 6-27.
- Voland, E., 2003: *Aesthetic Preferences in the World of Artifacts. Adaptations for the Evaluation of «Honest Signals»?*, in E. Voland, K. Grammer (eds.), *Evolutionary Aesthetics*, Springer, Heidelberg.
- Welsch, W., 2012: *Blickwechsel. Neue Wege der Ästhetik*, Reclam, Stuttgart.
- Welsch, W., 2004: *Animal Aesthetics*, available for free download on the website: <http://www.contempaesthetics.org/newvolume/pages/article.php?articleID=243>
- Zahavi, A., 1997: *The Handicap Principle: A Missing Piece of Darwin's Puzzle*, Oxford University Press, Oxford.