

BOOK REVIEW

The biological foundations of art: Denis Dutton's art instinct

The art instinct – beauty, pleasure, and human evolution

Denis Dutton

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Humanities, universals and biology

If we define 'humanities' as the study of what makes us human, it becomes clear those aspects of the human mind and culture that make us human, along with their biological foundations, are the stuff of humanities. If so, scientific investigations such as those of primatologist and behavioural neuroscientist Robert Sapolsky (Sapolsky 1998) in *Why zebras don't have ulcers*, and philosophical investigations such as those of the Buddha into the nature of human suffering, would both be part of the humanities. Denis Dutton's *Art instinct* belongs in this tradition, blending the scientific and philosophical modes of inquiry, investigating art as one of the important human traits that make us who we are.

When I started reading Dutton's book, I was reminded of how 25 years ago, an anthropologist friend saw Melvin Konnor's (Konnor 1982) *Tangled wings: the biological foundations of the human spirit* on my desk and bemoaned, 'You are not buying into that kind of stuff, are you? That is old-fashioned neo-Darwinian biological determinism. No one does that kind of stuff anymore.'

I was somewhat surprised by that reaction. Being a hardcore theoretical linguist, I had taken it for granted that human behaviour and human cultures are influenced by the human brain and mind, which in turn are shaped by our genetic endowment. Konnor's position did not appear to me to be an instance of biological determinism. Saying that minds and cultures are *shaped* by and *constrained* by biology is not the same as saying that they are *determined* by biology.

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Denis Dutton, who contributed extensively to our thinking on aesthetics, creativity and excellence and their possible evolutionary underpinnings, passed away on 28 December 2010 after a brief struggle with cancer.

For linguists like me who view our pursuit as the investigation of the human language faculty, it is obvious that no two individuals have identical grammars, even those who speak the same variety of a 'language' and have been brought up in the same household. And yet, there is also irrefutable evidence to show that such variability even across languages is shaped and constrained by a universal grammar that all human beings share.

I tried to explain this to my anthropologist friend, pointing out that no two snowflakes are identical, and yet they share the same universal design features; so variability at the concrete level does not exclude universality at the abstract level. It did not work. It appears to be that while physicists and theoretical linguists are preoccupied with and celebrate unity, biologists and cultural anthropologists are preoccupied with and celebrate diversity.

From cultural relativism to humanology

In early 20th century, linguists too celebrated diversity. Impressed by the myriad ways in which 'exotic' cultures and languages differed from 'western' cultures and languages, anthropologists like Franz Boas articulated an idea that subsequently became known as cultural relativism, that languages and cultures can vary in infinite and unconstrained ways, and that each language and culture should be studied in its own terms. Within this tradition, researchers view their brief as documenting differences, and not similarities, across cultures and languages.

It took a paradigm shift to see the unity underlying the diversity. In 1965, Noam Chomsky in his *Aspects of the theory of syntax* outlined a research programme for the study of the universal grammar of human languages, leading to research whose outcome provided incontrovertible evidence for the existence of universal 'laws' (stated formally as rules or constraints) across historically unrelated languages (Chomsky 1965). Given the universals of human language,

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a highly plausible hypothesis was that these universal patterns are the result of the very architecture of the human mind and brain, and that such architecture stems in turn from the architecture of the human genes. This conclusion was exhaustively defended in Eric Lenneberg's *Biological foundations of human language* (1967).

Steve Pinker's (Pinker 2007) *Language instinct* is probably the most well-known work that communicates to the educated nonspecialist the idea that 'underlying the apparent diversity of human behaviour is a set of universal patterns of the human culture and mind, shaped by the architecture of the human brain and genes'. There are others too: Brian Butterworth's *What counts: how every brain is hardwired for math* (we could call it '*The math instinct*'), (Butterworth 1999) Frans de Waal's *Good natured: the origins of right and wrong in humans and other animals* (we could call it '*The moral instinct*') (de Waal 1997), and Philip Ball's *Music instinct* (Ball 2010). To this, one may add other instincts such as the physics instinct, biology instinct, psychology instinct, technology instinct, probability instinct, justice instinct, and logic instinct, as Dutton lists on pages 43 and 44 (though not in the terminology I am using), drawing upon the work by George Murdock, Donald Brown, and Joseph Carrol. Dutton's *Art instinct* belongs within this growing body of work.

What unites these investigations is the thesis that I would like to explicitly state as follows: granted that human behaviour across individuals and across socio-cultural groups exhibits considerable variability, there are also universal patterns of human behaviour, including limits on variability (constrained randomness); asymmetries in probability (some traits being more probable than others); and invariance; these universals can be explained in terms of the shared architecture of the human culture and mind; and this shared architecture in turn can be explained in terms of the shared architecture of the human brain and genes.

There is a growing body of evidence to show that this thesis is correct (see Nowak *et al.* 2001). If so, what we are witnessing is the birth of an interesting phenomenon of the gradual evolution of the traditional 'humanities' into a new humanities, perhaps best called 'humanology'. Located at the intersection of the study of human evolution, human genetics, human brain, human mind, human society and culture, and human behaviour, it covers behavioural humanology, socio-cultural humanology, cognitive humanology, neuro-humanology, and bio-humanology. The emergence of recent fields such as bio-linguistics, neuro-ethics, and neuro-aesthetics, along with more established pursuits like neurolinguistics are instances of research in humanology.

The subject matter of the traditional humanities includes philosophy, literary criticism, and art criticism, with history as a possible addition. Its characteristic modes of inquiry are conceptual inquiry and textual/semiotic interpretation. (Conceptual inquiry is the investigation of concepts, addressing questions like 'What is justice?' and 'What is a gene?' Semiotics is the study of symbolic systems.) In humanology, the subject matter goes beyond these to include the sciences

mentioned above, and its modes of inquiry crucially include the scientific.

The seeds of neuroaesthetics were jointly planted by Semir Zeki in '*Art and the brain*' (Zeki 1999) and by V. S. Ramachandran and William Hirstein in '*The science of art*', both in the same volume of *The Journal of Consciousness Studies* in 1999 (Ramachandran and Hirstein 1999). In July 2001 issue of *Science*, Zeki wrote (Zeki 2001):

'... by probing into the neural basis of art, neurological studies can help us to understand why our creative abilities and experiences vary so widely. But it can only do so by first charting the common neural organization that makes the creation and appreciation of art possible.'

As an eminently well-written and insightful introduction to evolutionary esthetics, *Art instinct* is located squarely at the centre of humanology in terms of its subject matter, its predominant mode being that of conceptual inquiry.

Universals of aesthetic preferences

Anticipating the predictable objections from the academics of the cultural studies tradition that is antiscientific antibiological, Dutton begins his book with the description of a fascinating example of an experiment conducted in 1933. Based on an extensive survey of artistic preferences in 10 countries, two artists, Vitaly Komar and Alexander Melamid, painted 'most-wanted' and 'least-wanted' paintings for every country in the study. Dutton says:

'People in almost all nations disliked abstract designs, especially jagged shapes created with a thick impasto in the commonly despised colours of gold, orange, yellow, and teal. This cross-cultural similarity of negative opinion was matched on the positive side by another remarkable uniformity of sentiment: almost without exception, the most-wanted painting was a landscape with water, people, and animals. Since the overwhelmingly favourite colour in the world turned out to be blue, Komar and Melamid used blue as the dominant colour of their landscapes.'

Dutton quotes Melamid in an interview remarking:

'... we've talked to hundreds of people—they have this blue landscape in their head. It sits there, and it's not a joke. They can see it, down to the smallest detail. So I'm wondering, may be the blue landscape is genetically imprinted in us... We now completed polls in many countries—China, Kenya, Iceland, and so on—and the results are strikingly similar. Can you believe it? Kenya and Iceland—what can be more different in the whole ****ing world—and both want blue landscapes.'

Melamid goes on to say:

‘The blue landscape is what is really universal, maybe to all mankind.’

If the preference for blue landscape is repeatedly found—even if not invariantly—across members of the human species, the obvious question is: how do we explain this phenomenon? I would like to describe the path that Dutton invites us to explore in terms of the following levels of observation and conjectures:

Observation: preference for blue landscapes is a universal pattern in human behaviour.

Conjecture A: preference for blue landscapes is part of our art instinct.

Conjecture B: preference for blue landscapes is the result of natural or sexual selection in the course of our biological evolution.

Conjecture C: art instinct is the result of natural or sexual selection in the course of our biological evolution.

Conjecture A strikes me as unproblematic. Though conjecture B is clearly plausible, the evidence for it seems to me to be lacking in conclusiveness. Conjecture C, in my judgment, is seriously problematic: I am not convinced that all strands of art instinct can be shown to be the result of natural or sexual selection.

Unpacking the argument for conjectures A and B

Given the evidence that Dutton points to, it is hard to deny the truth of the observation that the preference for blue landscapes is universal. However, it is in principle possible to accept the universality of this preference without subscribing to the truth of its innateness. To make a case for A, it is necessary to rule out alternative explanations like the following:

Conjecture A': preference for blue landscapes originated in one culture, and spread to other cultures through borrowing.

Conjecture A'': preference for blue landscapes is the result of universal factors in the environment.

The universality of humans wearing trousers across national and cultural boundaries is not necessarily evidence for the innateness of the trouser-wearing trait: this could have been due to borrowing. Likewise, the universality of humans wearing warm clothes in cold climates is not an argument for the innateness of this trait either: that it was triggered by the contingencies of the environment is most plausible. Biological explanations are necessary only if explanations like A' and A'' are shown to be untenable.

Given that the preference for blue landscapes is found in cultures that have generally been insulated from each other, the explanation is unlikely to lie in borrowing, making A' implausible. And given that the preference appears in geographically dissimilar regions an explanation in terms of universals of geography is also untenable, making conjecture A'' also implausible. We are then left with A.

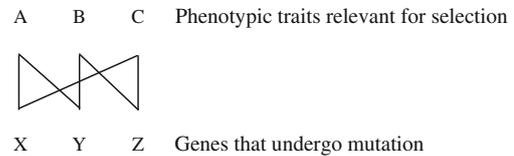


Figure 1. Schematic depiction of the many-to-many relationship between genes and phenotypes.

Taking A as the grounds for B, however, is not straightforward. To see what the complication is, let us begin with something that is well known to biologists, namely, the many-to-many relation between genes as protein-coding stretches of DNA on the one hand, and phenotypic traits on the other (figure 1). The phenomenon of one gene affecting multiple apparently unrelated phenotypic traits is pleiotropy. Thus, p53, which suppresses cancer, also suppresses stem cells, thereby accelerating ageing. The converse of pleiotropy is the phenomenon of polygenic traits, in which a single phenotypic trait is coded by multiple genes. Thus, the pigmentation of the compound eye of the drosophila is estimated to be coded by about a hundred genes. These many-to-many relations can be diagrammatically represented as follows:

Suppose trait A is advantageous to the organism in terms of natural or sexual selection. When it gets selected, gene X will be retained, which would mean that trait C would also be retained even though it is not selected. In their influential paper, ‘*The spandrels of San Marco and the Panglossian paradigm: a critique of the adaptationist programme*,’ Stephen Jay Gould and Richard Lewontin (Gould and Lewontin 1979) borrow the term spandrel from architecture to refer to by-product traits retained in this manner (such as trait C above) despite not being selected.

All this is well known in biology. Let me therefore state the epistemic moral of the story for evolutionary explanations as follows:

‘A phenotypic trait may be preserved in a species either because it gets selected, or because it is a spandrel of some other trait that gets selected. Therefore, to explain a given phenotypic trait in terms of sexual or natural selection, and to show that it is adaptive, we must rule out the possibility of its being a spandrel’.

The current state of the art in biology does not offer us a theory of the gene-phenotype pairing such that we can exhaustively tell which traits and genes stand in a one-to-one relation (without worrying about spandrels), and which ones involve a many-to-one or many-to-many relation (calling for the ruling out of spandrels). In the absence of adequate information on the pairing, therefore, the explanations in terms of biological adaptation are at best suggestive, not conclusive.

Dutton discusses the spandrel problem in detail in chapter 5 of *Art instinct*. Yet the book appears to give the impression

that the argument for conjecture C is quite sound. Though sympathetic to Dutton's project, I remain dubious, since we do not have any information on which gene or which gene collective codes for the blue landscape preference. In the absence of this knowledge, I take Dutton's story to be plausible, but the justification for it to be inconclusive.

Unpacking the strands of art: conjecture C

Conjecture C—the claim that art instinct is the result of natural or sexual selection in the course of biological evolution—is a generalization of conjecture B—the blue landscape claim. And of course, the reasons for treating B as inconclusive would be inherited by C as well. But for the moment, let us accept B, and see if that allows us to make a case for C.

To evaluate Dutton's evidence and arguments in support of conjecture C, it would be useful to unpack the different strands of 'art'. In chapter 3, Dutton addresses the question, 'What is Art?' and offers a set of 12 characteristics—such as direct pleasure, skill and virtuosity, style, novelty and creativity, and representation—that would collectively constitute a very good definition of art. However, to be able to generalize from conjecture B to conjecture C, we would still need to identify strands of art other than the mimetic, and check if they can all be explained in terms of evolutionary adaptation.

As a starting point, let us make the following statement: representational/mimetic art such as fiction, representational painting, and mimetic dance (e.g., ballet, *naatya* in *Bharathanatyam*, and so on) may be the result of biological selection; nevertheless, nonrepresentational abstract art such as percussion, abstract painting, and abstract dance (e.g., hip hop, *nrtta* in *Bharathanatyam*, and the like) may be spandrels.

Ramachandran and Hirstein (1999) suggest that the exaggerated waist-hip ratio and other norms of feminine beauty in classical Indian painting and sculpture are signals of reproductive fitness. They may well be right with respect to the representational strand in art. But the relatively abstract canons of the golden ratio of Greek sculpture, the ratios of musical notes, or similar formal norms of abstract painting discovered by Semir Zeki and colleagues are not amenable to adaptationist interpretations. When we argue for a biological explanation for why art exists, it is important not to equate 'art' with mimetic art. I would have been happier if *Art instinct* had made explicit which strand of art it seeks establish as a case of biological adaptation.

The problem is more than that of art alone: perhaps it lies at the very core of the essence of humanness that humanology needs to grapple with. Consider the following connections. Art as the beauty of an abstract pattern finds its manifestation in Mondrian's paintings, percussion, *nrtta*, and Greek norms of beauty. Interestingly, it is also

found in mathematics, and although to a less extent, theoretical physics. The beauty of such abstract patterns is what formalist theories of art are about.

Art as deeper truth not obvious on the surface is found in the great epics of ancient Greece and India, in Shakespeare, and in Tolstoy. Interestingly, the human yearning for truth is expressed in mathematics and theoretical science as well, even though mathematics is concerned with necessary truths and science with contingent truths. Both Keats and mathematicians agree that 'Beauty is truth, and truth beauty,' and theoretical physicists often get very close.

Art as an imitation of surface reality is found in realist and illusionist styles of painting and naturalist fiction. Interestingly, it is also found in phenomenological laws and correlations in science.

Art as something that serves a useful purpose is found in Aristotle's theory of catharsis, literature that seeks to instruct, and the Marxist theory of literature. Its counterpart would be the human predilection for technology and engineering. I am persuaded to think that Dutton's theory of art as the result of biological selection comes from the same roots.

To summarize then, art is not a single monolithic entity. It is a tapestry of different threads woven together, each valuable in itself, but not constituting the entire tapestry. From this perspective, attempting a single evolutionary explanation for all threads of art is unlikely to be successful.

Readers and art instinct

In the preceding sections, I was articulating what reading *Art instinct* led me to become preoccupied with. In some sense, this has been more my thoughts on the book than a faithful review of each chapter of it. But I do hope that the readers' curiosity and interest would be sufficiently aroused to nudge them to get a copy and read it.

Before I close, I should add a few notes on what I enjoyed most about the book. The defense of the universalist view of art, and the cleanly and pointedly formulated arguments against the cultural relativist doctrines of art in chapter 4, were thoroughly enjoyable. The reader might wonder (and would be right) if my reaction comes from sharing Dutton's irritation with sloppy academic work. I would recommend chapter 5 (Art and Natural Selection) to anyone interested in a serious study of art as a human phenomenon. This is particularly true for those who have a weakness for biology: the chapter clearly articulates why art is of interest to evolutionary biologists.

Chapter 6 is titled, 'Uses of fiction.' I am tempted to accept Dutton's evolutionary take on art, but, as I said earlier, it would not extend to nonrepresentational art. The argument in chapter 7 for art as the 'squandering' of resources and its value for sexual selection is interesting and worth engaging with. But I am not convinced. Members of the

human species repeatedly demonstrate their capacity to pursue something greater than themselves with dedication, often sacrificing their possibilities of mating and survival. Rembrandt and Van Gogh were admired for their art after their death; Bruno was burnt alive for his dedication to truth; they all defy the claim of reproductive fitness, and therefore, of natural and sexual selection: they demand a different explanation.

I found myself dozing off after chapter 7. But I cannot demand that an author write only about things that interest me. So I won't hold it against the book, as there would be many readers who are excited by these chapters.

Let me end with Dutton's reminder of the unity of the human species underlying its diversity:

'Preoccupied as we are with the flashy media and buzzing gizmos of daily experience, we forget how close we remain to the prehistoric women and men who first found beauty in the world. Their blood runs in our veins. Our art instinct is theirs.'

When I agreed to write a review of the book, *Art instinct*, I did not expect to be as deeply engaged with it as I have become. I strongly recommend the book to anyone who enjoys intellectual engagement.

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