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Art and aesthetic behaviors as possible expressions of our biologically evolved human nature

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No known human culture lacks singing, dancing, drawing, fictional storytelling, or acting. In other words, art is pan-cultural and, to the extent that all participate at least sometimes in such activities, is even universal. Works identified without qualification or hesitation as art by paleo-archaeologists date back at least forty thousand years (Davies) or earlier (De Smedt and De Cruz). Moreover, art behaviors often are self-motivating and intrinsically rewarding. On this basis – that is, because they are ancient, universal, and pleasurable for their own sakes – the ethologist Ellen Dissanayake suggests that art making and appreciation are evolved aspects of human nature. According to her, they are biological adaptations. That is, they improved the reproductive success of our ancestors who passed them to their offspring. As a final result they have become universal.

Notice that this account presupposes a rather humble notion of art, including folk, domestic, and popular varieties. How and if it applies to *recherché* avant-garde Fine Art is not yet clear. And notice also that the emphasis is more on psychological dispositions and the behaviors that give expression to them than on the artifacts or events that are produced. If anything is adaptive, it is not such things as songs, novels, or paintings, but the behaviors involved in producing and appreciating them.

Dissanayake is not alone among those with a scientific background in maintaining that art behaviors are an adaptation (see also Miller), and the position is supported by many humanists also (see Dutton and the literary Darwinists discussed below). But many other scientists (Pinker; Tooby and Cosmides) assume as the default that the arts are not adaptive in their own right, but rather are byproducts (or "spandrels"). In other words, though they are not adaptive behaviors in themselves, they come as a bonus along with other dispositions or traits that are adaptive. For instance, fictional storytelling might

be an offshoot of hypothetical practical reasoning and of our propensity to construct narratives about our identities and actions. Still, it can be difficult to adjudicate between the adaptive and byproduct options and, either way, art is strongly linked to the biological grounding of our human nature. Only the view that art is so distanced from the effects of biological evolution that it must be classed as a purely cultural technology, as maintained by Patel, denies this link.

As an alleged adaptation, when, for whom, and in what ways are art behaviors proposed to have first improved reproductive potential?

The most common view is that art behaviors were adaptive for our distant forebears and, as a result, became universal. It is generally assumed that they continue to provide benefits, but because they are universal, not benefits that produce significant differences in comparative reproductive success. A minority of adaptationists questions the contemporary status of the arts, however. It has been suggested, for instance, that in a modern world of informational overload, our interest in stories might have become maladaptive (Hernadi). The opposite position, that art was not adaptive in the past but that it is so now, by helping us adjust to the mismatch between modern and ancestral lifeways (Argyros), is less widely held. The view that art behaviors have only ever been adaptive for a minority of virtuosos is not commonly advocated (but for a related idea, see Nettle and Clegg). The low heritability of artistic genius would normally count against its biological selection. But perhaps the apparent sexual attractiveness of highly successful artists consistently counterbalances this.

In classical Darwinian theory, the units of selection are individuals (or their genes) and the transmission of adaptations is genetic. Many adaptationists about art present theories conforming to this paradigm, though they rarely consider how genetics might operate in this case and prefer instead to see the spontaneous emergence of proto-art behaviors in children as evidence of their biological foundation. There is no inconsistency in holding that individuals are the units of biological selection while identifying the benefits of art behaviors as accruing largely to social groups (Dissanayake; Hernadi), provided that differences in comparative individual reproductive potential are not thereby swamped. However, some other adaptationists about art explicitly adopt a model

of group (aka multilevel) selection (Boyd 2009). That is, they think that biological selection also operates between groups as a result of inter-group competition, that inter-group competition sometimes influences potential reproductive success more than intra-group competition between individuals, and that the relevant mode of group-level transmission is largely cultural. Yet more adaptationists identify the benefits of art behaviors as primarily social without making clear where they stand as regards the units of selection and the different kinds of evidence relevant to distinguishing between them.

Some theorists treat the arts collectively as adaptive. According to Dissanayake, along with play and ritual, they are modes of "making special." Miller holds, instead, that they are forms of display with which males attempt to attract the sexual attention of females. Other theorists focus on particular art forms, implying either that different art forms are not adaptive or, alternatively, that each is adaptive in a unique fashion. For instance, Cross argues that the semantic vagueness of instrumental music allows it both to build bridges between otherwise mutually isolated domains of thought and to promote flexibility and harmony in social relations.

The most striking example of art-specific theorizing is the movement known as literary Darwinism (Boyd 2009, 2012; Carroll; Gottschall and Wilson; special numbers of *Style* in 2008 and 2012). Scalise Sugiyama adopts an anthropological perspective and focuses on hunter-forager groups, but most proponents are English literature academics who consider folk tales, poetry, drama, and novels. Many literary critics have applied the ideas of evolutionary psychologists on mate selection, aggression, social competition, and the like to the interpretation of literature. Literary Darwinists go further, arguing that literary behaviors inherit an evolutionarily adaptive function from the oral traditions that preceded them. In this adaptationist camp, as in those for other art forms, the protagonists disagree about what the art form is adaptive for.

What adaptationist advantages have been claimed on art's behalf? Focusing on the individual, it has been argued that proficiency in art behaviors improves sexual status (Dutton; Miller) or social status more generally (Boyd 2009), that it refines perception (Allott) and cognition (Cross), that it promotes identity formation (Ralevski), and that it stimulates sociality (Boyd 2009; Cross;

Dissanayake). In the case of literature, it has been suggested that exposure refines our mind-reading skills and the sympathetic comprehension more generally of human psychology, morality, and action (Carroll; Gottschall). In terms of wider social benefits, it is suggested that art affirms group values and identity, facilitates cooperation and entrainment, and immeasurably enhances the power of group action and ritual (Boyd 2009; Cross; Dissanayake). Of course, these various benefits may be complementary, so it is not uncommon to find a given theory listing more than one of them in making its adaptationist case. But thoughtlessly combining claimed advantages can lead to incoherence. It is possible that the group benefits from shared art behaviors that also allow sufficient variation for the individual to distinguish herself from others in her artistic aptitudes, but art cannot at the same time and in the same way both be emblematic of group identity and symptomatic of individuality.

What support can adaptationist accounts of art derive from neuroscience? Innately specified art-specific neural circuits would provide strong support, but either the evidence for these is inconclusive or negative, as in the case of music (Patel), or it is not even considered plausible, as is so with fictional storytelling. While there has been work on the neuroaesthetics of visual art, this is mostly concerned with principles of perception and not with possible evolutionary functions for such art.

A common approach to the topic follows the methodology adopted by evolutionary psychologists. They assume that adaptations represent successful responses to the challenges of the ancient environment in which our distant predecessors came to display psychological and behavioral modernity some forty or more thousand years ago. Via "reverse engineering," they try to determine what those challenges were. It is often assumed that our human natures have not changed significantly in the interim and that what was adaptive then is most likely similarly adaptive now.

A now standard complaint is that this method is too speculative. It results in untestable "Just so" stories. When it comes to issues such as mate attraction, this criticism can seem unduly harsh. It is likely that our reproductively successful forerunners found signs of health and fertility attractive, and that we share many of those same predilections. But when it comes to art behaviors,

which leave little by way of archaeological traces and depend on patterns of social organization, cosmological beliefs, and complex lifeways of which we remain deeply ignorant, it is difficult to gainsay the worry. And the fact is, there are so many different, sometimes incompatible theories on offer, and these theories go so far beyond any available evidence, that it is difficult to know how to begin to evaluate them.

Besides, our understanding of present-day art practices and their functions may be conceptually tangled. As an illustration, consider literature viewed as adaptive. Where does the adaptation lie? Is it in the propensity to narrativize? So strong is the tendency that it is likely to mark an adaptation, but it is not specifically a literary one. We weave narratives in telling our histories, in planning the future, in analyzing where we are and what to do. What about imaginative fictional thinking? But again, this is the hallmark of practical reasoning – of hypothetically examining the future and counterfactually considering the past – and as such is not distinctive to literature. Well, perhaps the specifically literary adaptation lies in the creation of fictional narratives. But that cannot be correct if lyrics, which present a perspective rather than relate a narrative, could also implement the literary adaptation (Boyd 2012). My point is not that it is impossible to pin down the alleged adaptation for literature of which literary Darwinists speak. Rather, it is to illustrate the conceptual forethought and care that is appropriate to embarking on the enterprise. Unfortunately, literary Darwinists tend to wade in without such preliminaries.

To make matters worse, advocates from the humanities for the idea that the arts are adaptive do not always seem to be clear about what evolutionary explanations require. Arguing that something is important to us and provides noteworthy benefits is not in itself sufficient to demonstrate that that thing was biologically significant for our ancestors' survival and reproductive success. Claiming that we can learn weighty truths from art and that it provides a moral and emotional education, rather than supporting the cause, implies that genetic inheritance does not play a role beyond disposing us to be inquisitive and educable. In addition, there is the concern that the argument may be ideologically motivated. Apparently it is offered sometimes to show that, because the arts are a part of human nature, the humanities are no less important than

the sciences, or alternatively, to oppose prevailing disciplinary paradigms that assume the cultural relativity of all meaning.

This is not to suggest, however, that we should default to the byproduct hypothesis. It seems to me that the temptation to speculate wildly beyond the evidence is no less apparent here. And without being able to identify the adaptation to which art behaviors stand as a byproduct and without also testing the possibility that, whatever their origins, they have gone on to become adaptive in some new way, neither of which is usually attempted, the byproduct thesis lacks credibility.

Should we then prefer the idea that art is a purely cultural technology with only the most distant connection to very general evolutionary adaptations? After all, there is no denying the cultural malleability of art practices and their local dependence on artifactual technologies. Nevertheless, given how much there is that is universal across art behaviors in different cultures, so that tales of love and loss, crime and punishment, pride and prejudice recur again and again from society to society, and given how art can appeal in such an extraordinarily compelling fashion across millennia, as the cave paintings of the Ice Age do, and in addition, taking into account the cost of art behaviors in terms of time, resources, skill, and energy – given all this, it seems implausible that art is **no more than** a cultural invention.

We need not settle whether art is an adaptation or a byproduct before we can acknowledge how deeply embedded in human nature it is (Davies). And it is also significant that art behaviors signal among other things, intelligence, emotional sensitivity, creativity, imaginative flexibility, and cooperative social awareness, all of which correlate in turn with biological fitness. Even if we all display art **aptitudes**, the variety of art types and the degrees with which they can be mastered mean that there will be complex differences between us. So, in addition, art behaviors can serve as informationally rich and nuanced indicators of biological factors relevant to potential reproductive success.

Let us turn now to the aesthetic, broadly conceived here as the beautiful. Given the obvious connection between assessments of human beauty and of sexual attractiveness, we might predict that it will be much easier to link

aesthetics and evolution than art and evolution. The problem, though, is that even in the realm of human beauty, sexual attractiveness is only one version of the beautiful, and it is the wider remit that we need to address.

According to evolutionary psychologists, what we find sexually attractive are signals of health and fertility (Skamel). Bodily and facial symmetry are key indicators of health (Perrett; Skamel). One way of connecting sexual attractiveness to broader notions of beauty is by noting that we also appreciate symmetry in artifacts. One of the earliest examples of aesthetic behavior in a proto-human species dates to four hundred thousand years ago in the production of about 2% of handaxes (Kohn and Mithen). These were worked far beyond what was functionally required in order to make them symmetrical (and also sometimes to display fossils and minerals in the stone). Moreover, it appears that some of the finest examples were not put to practical use.

The relationship between human beauty and non-human beauty need not be as close as this. If sexual attractiveness tracks health and fertility, then beauty draws us to what promotes our reproductive success. In a similar fashion, we might be drawn also to what in nature promotes our survival and reproductive success. This is the main idea behind evolutionary accounts of the aesthetic preferences we show for environments that are conducive to our survival. We find beautiful those environments that offer food, potable water, safe refuge, ease of navigability, and the like (Kaplan and Kaplan; Orians and Heerwagen). Moreover, exposure to natural, as opposed to urban and suburban habitats, produces benefits to physical and mental wellbeing (Ulrich).

A stronger thesis – that our ancestors found savannah beautiful because this was the habitat in which humanity reached its modern form (Dissanayake; Dutton; Orians and Heerwagen; Tooby and Cosmides) – is harder to agree with. Whereas adults tend to prefer pictures of the habitats with which they are most familiar, young children in the US and Nigeria show a preference for pictures of savannah and this has sometimes been interpreted as a vestige of an ancient aesthetic preference (Balling and Falk; Orians and Heerwagen). The response may, however, be conditioned by American yards and playgrounds (though this is challenged in Falk and Balling) or, alternatively, by the comparatively low pictorial complexity of savannah pictures, because it has been demonstrated

that young children prefer less to more complex pictures. Meanwhile, the period in which modern humans evolved was one of extreme, fast fluctuations in climate and environment (Finlayson, Potts) rather than one of stability, as the savannah hypothesis assumes. And it is important to recall that humans are niche constructors who buffer themselves against natural environments. In fact, our social environment is more important in shaping our nature than is the physical one (Davies); other people are our natural habitat. In addition, it appears that we are adapted to have the behavioral flexibility to create technologies allowing us to live in almost any earthly environment.

Having just noted the importance of the social, as against the physical, environment, we can return to the topic of human beauty. Rather than being confined to mate attraction and reproduction, our interest in human beauty is broadly social. It plays a role in self-definition and self-presentation. And it operates more widely as a measure of social performance, taking account not only of physical appearance but also of personality, sociality, emotionality, intelligence, humor, and much more. It is only by adopting this wider perspective on human beauty that it becomes understandable that we find beauty in displays of dignity, compassion, justice, and courage, for instance (Davies).

So far the implication is that our aesthetic preferences attract us to what promotes our survival and successful reproduction and perhaps also that they repel us from what is potentially harmful or unproductive. On this model, our aesthetic preferences are like many of our emotions: they light up things that matter to us and guide us successfully in negotiating the world. This account plausibly explains how such reactions arose and why they take the form they do. It also helps us to assess the possibility that other species experience aesthetic responses of their own. Such responses would be evolutionarily useful only to intelligent creatures capable of learning from experience and altering their behaviors accordingly. There is no reason to predict that behaviorally inflexible creatures seek and are guided by aesthetic experiences.

This runs counter to a view sometimes expressed by biologists, including Darwin (pt. 1, ch. 3:92; pt. 2, ch. 11:329; pt. 3, ch. 21:616; see also Prum), that birds and insects choose their mates on the basis of finding their displays to be beautiful. But the underlying supposition – that all positively valenced

perceptions are aesthetic – is inappropriately broad. To the extent that their decisions involve awareness, bird and insect choices are more likely driven by lust or a sense of aptness than by a quest for beauty.

We noted above how the emergence of aesthetic sensibilities might have been adaptive, by directing us to what is in our evolutionary interests. But it is important also to note how widely our aesthetic interests range and how, sometimes, they can be maladaptive.

By way of illustration, consider the aesthetic interest we might take in non-human animals. If we find beauty in how precisely they are adapted to their way of life, we are liable to become better hunters as a result. But on the other hand, if we find them appealing as a result of falsifying their natures – for instance, by inappropriately anthropomorphizing them, as we are strongly inclined to do – the outcome for us could be unfavorable sometimes. Animals, fish, and birds can stimulate our delight in strong, patterned colors – as birds of paradise do – or appeal to us because they resemble human babies – as large-eyed creatures and mammalian young often do. Such responses are unlikely to benefit us evolutionarily, however. And finally, we might abstract from their living natures to view them imaginatively as beautiful kinetic sculptures. Almost anything can be approached for the sake of its aesthetic interest and often, as in this last case, the aesthetic agenda shares little in common with the biological program natural and sexual selection have drawn up for us.

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