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Evolutionary Psychology and the Visual Arts

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INTRODUCTION

My first university qualification was in Fine Art, specialising in painting; I have been professionally involved with art, education, and art education for over half a century. While my professional interests have revolved around visual art and, to a lesser extent, developmental psychology, my personal interests lie elsewhere: natural history, particularly ornithology and palaeontology. In attempting to address the difficulties of maintaining an academically rigorous argument, I draw upon my personal and subjective experiences of over 50 years of practical and theoretical work within the art world. I position myself, therefore, as an artist with an active interest in evolutionary psychology, rather than as an evolutionary psychologist with an active interest in art. As an academic artist, I have read many texts written by the latter and have been aware of the tendency among such authors to adopt a simplistic view of the nature of art and art-making. In this chapter, I hope to avoid the tendency to make assertions about disciplines that are beyond my area of expertise and use my theoretical and practical art experiences to inform the present text. While autoethnography could not be considered to be a reliable source of information in discussions about evolutionary psychology, in the present instance, some degree of introspection on my part could prove useful, so I shall draw upon some of my own experiences as an artist and educator to inform my argument.

As a student, and also in my capacity as an educator visiting many different schools in different regions, I noticed that there was often, if not always, someone in each class who was 'good at art' – this usually meant someone who was skilful in representational drawing. In my own case as an eight-year-old, I was a prolific scribbler, and when I was praised and eventually rewarded with my first 'gold star', I scribbled all the more. This extrinsic reward of praise created a 'virtuous circle' of practice/reward/practice/greater fluency/reward, etc.

An early memory was my parents discussing with other relatives where my alleged artistic ability 'came from', with one aunt recalling that one of my uncles was 'good at art'. My early ability in representational drawing was not simply a social, learned phenomenon but arose more or less spontaneously and was fostered through social interactions. Everyone can learn to be more skilled in a particular activity; while skills can be developed, some people appear to have a higher level of innate skill and a greater predisposition to skilfulness in certain areas. On the basis of my observations, not everyone is capable of producing art work of great merit (however we define it), nor is everyone capable of making highly refined aesthetic judgement, but in both cases – that of making and appreciating art – all are capable of getting more skilled as a result of tuition and practice. If one accepts this, then it follows that all humans have an inborn capacity for some kind of artistic ability – of being skilled in artistic representation and making aesthetic judgement – but the level of such skill varies. Of crucial importance is the notion that whatever one's starting point, we can become more skilled through instruction.

DEFINING ART

We should not underestimate the difficulties associated with the topic of evolutionary psychology and the visual arts. The concept of art is contested, while evolutionary psychology as a discipline is relatively young and by its nature is subject to conjecture and assertions based on circumstantial evidence. As noted by Dissanayake (1995a: 101), it is only when we have an 'adequately defined' definition of art that we can proceed with any discussion pertaining to its role in human evolution.

So, what do we mean by 'art'? The 'we' in this instance refers to 21st-century, educated English-speaking readers. I have noted at length elsewhere (Hickman, 2010) that there are at least 14 different senses of the word 'art' as it relates to skill (as opposed to, for example, the old English phrase 'thou art'). It is interesting to note that only one of these is in the sense of what is often referred to as 'Fine Art'. No English dictionary before 1880 defined art in the sense of having an association with the creative and the imaginative; this association, as a means of classification, dates from the late 18th century.

A current commonly accepted notion of what art-making behaviour involves can include the concepts of skill, expression, and imagination; to these, we can add the ability to make aesthetic judgment. Art-making, or rather, as Davies puts it, 'art-behavioral competence' (2012: 51), can be seen to be the ability in humans to bring together skill, expression, and imagination. It is noteworthy that Gardner (1999), in his influential work on multiple intelligence, identifies several types of 'intelligence', including musical intelligence, but does not identify an 'art intelligence'. This points us to the notion that ability in art may not be one single competence but a group of competencies. I suggest that a suitable term to replace 'art-making', one that is broad and inclusive of cultural difference, is 'creating aesthetic significance'. However, because involvement in visual art involves judgement and appreciation, my preferred term is the more comprehensive 'creating *and conferring* aesthetic significance'. This term is useful in that it can be related to making (as in 'creating') and forefronts the concept of aesthetic judgement, which is central to any discussion about 'art' phenomena. Moreover, the word 'significance' is useful in highlighting the notions of value and meaning or indeed being special (see Dissanayake, 1995b, and the following section).

The available literature is wide ranging and draws upon several disciplines, including ethology, archaeology, and anthropology. Further to this, De Smedt and De Cruz (2010: 698) asserts that cognitive neuroscience

can offer useful insights and can 'address the proximate causal mechanisms that are involved in artistic behavior, in particular the brain structures that are responsible for art production and appreciation'.

Geoffrey Miller (1999), writing from the perspective of an evolutionary psychologist researching sexual selection, is at the forefront of those proposing that humans have inherited instincts to display social status and that this gives a reproductive advantage. The corollary of this is that art-making, and, presumably, its acquisition, confers such status and is heritable.

Seghers (2015) posits that artistic behaviour might be centred in just one brain area, a suggestion promulgated by Miller (1998). However, it seems reasonable to look for several abilities, each associated with different areas of the brain, that together enable the creating and conferring of aesthetic significance. Pinker (1997) employs what he terms a 'mental toolbox' metaphor to argue that human minds contain a range of tools that can be used, or building blocks that can be assembled, to achieve different behavioural outcomes such as the creating of artefacts. Studies in cognitive neuroscience (e.g. Pearce et al., 2016; Solso, 2000) show that mental features incorporated in artistic behaviour are widely distributed and scattered across the brain. I propose that practical skill, evident in refined hand–eye co-ordination, combined with the ability to give expressive form to imagination, are principal components of art behaviour. These two facilities are likely to be associated with different brain functions that together give us the ability to create and confer aesthetic significance. I shall now comment on the evolutionary dimension of these facilities.

TECHNICAL SKILL

During the past 150 years or so, there has been a gradual move away from valuing technical skills in the visual arts – in particular, craft skills – towards a greater concern for the idea behind the work rather than the physical work itself. Put simply, the advent of photography and the availability of new technologies and media have led to an emphasis on experimentation and novelty, with practical skill, particularly with regard to verisimilitude, being downplayed. In view of this, I propose that much of what passes for contemporary art can be seen to be a perverse blip in the long line of human creative endeavour. Dutton (2001, 2003, 2009) notes that technical artistic skill is one of seven 'universal signatures' associated with art-making. In advocating a biologically evolved (rather than a socially constructed) conception of art, Dutton identifies six other characteristics: non-utilitarian pleasure, stylistic rules, appreciation and interpretation, imitation, special focus, and, importantly, imagination. A flaw in Dutton's argument, from the perspective of the contemporary artist and from people working in the contemporary art world, is the notion that 'imitation' has anything to do with art as currently conceived. Moreover, from a modern or indeed post-modern perspective, the assertion that art-making is universal appears to be simplistic. Dutton nevertheless asserts that art forms are found everywhere, regardless of culture, and that art's universality suggests that it is connected with prehistoric psychological adaptations. Dutton (2009) uses a larger set of criteria (a 'cluster' definition) for designating a phenomenon as 'art', demonstrating art's cross-cultural and historical universality to give weight to his argument that the instinct to make art is universal. The notion that 'art' is universal flags up again the issue of definition; if we use my preferred term, concerned with aesthetic significance, then we can more easily acknowledge some kind of universality across human culture, especially if we consider such things as concern for one's appearance – hairstyles, for example – the appearance of food, and the desire to have a particular kind of order in our

immediate environment, perhaps reaching its apogee in the creation of gardens.

Proficiency in visual perception is undoubtedly a faculty that helped our Pleistocene ancestors survive on the savannah. A particular skill, one that I have found central to my own artistic practice, is the simple act of *noticing*. Artists tend to notice things, like paint flaking off an old door – revealing a palimpsest of previous incarnations – chimney pots, coins in the gutter, or inebriated wasps rolling around inside rotting apples. Such a facility would undoubtedly have served the Pleistocene hunter-gatherer well.

GIVING EXPRESSIVE FORM TO IMAGINATION

Effective communication is facilitated by the quality of the mode of transmission. In visual culture, the aesthetic quality of the visual form is often highly valued and is usually dependent on the technical skill of the communicator. Mithen (1996, 1999, 2000, 2005), writing as a cognitive archaeologist, postulates an organically based cognitive development model in which the previously separate domains of the mind became accessible to one another. He argues that the brain domains devoted to, for example, technical understanding, social interaction, and natural history have over time blended together; out of this blend there emerged a new range of creative cognitive activity. The notion of 'creativity' is a key consideration here: Mithen argues that modern humans differ from their ancestors in that they are capable of original, creative thinking, characterised by what he terms 'cognitive fluidity'. This refers to the mechanism whereby the modular primate mind evolved into the modern human mind (i.e. after 50,000 years before the present) by combining different ways of processing knowledge. Mithen (1996) further asserts that through the use of metaphor and analogy, modern humans are able to have original thoughts that can facilitate creative behaviour and in this respect are different from our ancestors. Cognitive fluidity therefore is seen by Mithen as a key element of human consciousness. Mithen (1996) uses the metaphor of the Swiss Army knife to describe the domain-specific nature of the archaic human mind, suggesting that *Homo neanderthalensis* and *Homo erectus* operated in the social, material, and natural worlds by way of a series of largely isolated cognitive domains. According to Mithen, the cognition of modern humans appears to have become less compartmentalised and more fluid.

THE OLDEST ART

Dates for the earliest art forms, or at least evidence of symbolic meaning-making, are contentious, with earliest dates moving back in time as new discoveries are made. At the time of writing, the earliest evidence of non-utilitarian hominin activity that might have some symbolic meaning is in the form of cupules incised into rock. Cupules are depressions in rock surfaces that resemble the shape of a spherical cap or dome, made by direct percussion with hand-held hammer-stones, and are considered the world's most common rock-art motifs. The fact that they are found on vertical and sloping rock panels in addition to horizontal planes suggests that they were not created for utilitarian purposes, such as grinding seeds. Van Peer et al. (2003) report that seven small pits in a sandstone slab from Sai Island, Sudan, can be dated as being around 200,000 years old. A much older age range has been claimed for numerous cup marks reported from Auditorium Cave and Daraki-Chattan, two sites in the extensive Bhimbetka complex in central India; Malotki and Dissanayake (2018: 73), however, note that this has been refuted by rock-art experts who have since examined the site (e.g. Blinkhorn et al., 2012).

It is possible that hominins other than *Homo sapiens* created forms of aesthetic significance. The lithic figures of what are known as the Venus of Berekhat Ram and the Venus of Tan-Tan, found on the Golan Heights between Syria and Israel during the summer of 1981 (Bednarik, 2003), contain marks suggestive of the head, body, and arms of a female human. The Venus of Berekhat Ram was possibly created during the Stone Age Acheulean culture, which lasted from 500,000 to 300,000 years ago. While the artefact's oldest estimated age has been given as up to 700,000 years old, its provenance is disputed because it was found sandwiched between an upper layer of volcanic residue that is dated to be as 'young' as 230,000 years old and a lower layer dated to much earlier. Nevertheless, it is probably the oldest example of an artefact of its type recorded to date. Of particular significance is that it might have been created by an early hominin such as *Homo heidelbergensis* or *Homo erectus*, as these early humans were alive during the Acheulian period. There is some dispute as to whether they were capable of the symbolic thought processes necessary for creating art, but this 'Venus', together with the morphologically similar Venus of Tan-Tan, give some compelling evidence of very early aesthetic phenomena.

The 'Lion Man' is a prehistoric ivory sculpture discovered in the Hohlenstein-Stadel – a German cave – in 1939 (Kind et al., 2014). It is believed to be about 40,000 years old and has been considered the earliest evidence of religious belief found in an artefact. However, pieces of red ochre found in the Blombos Cave in South Africa, with deliberately engraved designs, are currently said to be the oldest known evidence of the creation of a complex image. Henshilwood et al. (2009) dated the latter finds to be from at least 77,000 years ago. The pieces are carved with a pattern of crossed lines; one can speculate that this shows that humans had a capacity for abstract thought, and use of symbols, tens of thousands of years before they spread from Africa to Europe. Neanderthals inhabited Europe and western Asia between 230,000 and 29,000 years ago, and archaeologists have found various objects used by them, notably items found in the Fumane cave, near Verona in Italy (Morin and Laroulandie, 2012). Evidence obtained from this cave shows that there was a clean break between Neanderthals and modern humans, both in their culture and lifestyle. Fogliazza (2011–2012), a palaeoartist, recreated a model of a Neanderthal male, based on finds from the Fumane cave showing the use of ornamental feathers and other signs of conferring aesthetic judgement: the ears are pierced and the neck is wrapped in fox fur, from which eagle claws hang; the face is painted with red and black pigments. While it seems that Neanderthals did not use complex tools, they had mastery of fire and built shelters, and it is thought that they had language and a complex social structure, living in small family groups (Wynn and Coolidge, 2004). It is not known why Neanderthals became extinct, but one theory is that they were outcompeted by modern humans – *Homo sapiens* (Flores, 2011). *Homo neanderthalensis* painted caves in what is now Spain before *Homo sapiens* arrived in Europe (Hoffmann et al., 2018). The finding suggests that the extinct hominins, once assumed to be intellectually inferior to *Homo sapiens*, may have been artists with complex beliefs. Neanderthals had larger brain cavities than modern humans (for lucid discussions on brain size in early hominins and the development of metacognition, see, for example, de León et al., 2008; Mithen, 2000). As a side issue, it is interesting to conjecture that modern human's stereotype of an unsophisticated, simple-minded, or even thuggish person often refers to the physical appearance of a typical Neanderthal (at least in the West).

ART BY NON-HUMANS

I have heard it said on several occasions that 'art is what makes us human'. This assertion

is challenged by some who point to examples of animals other than humans making 'art'. It looks increasingly likely that our attitude to non-humans will change over the course of time as we realise that the organisms with which we share this planet are capable of much more than we currently give them credit for. Non-human primates, such as chimpanzees, for example, have given some indication of an ability to make aesthetic decisions. The anthropologist and painter Desmond Morris (1958) worked with a chimpanzee (*Pan troglodytes*) named Congo, who learned to paint abstract paintings. Other primates, such as orangutans, have also produced images that are reminiscent of abstract expressionist art, for example those of Baka, a Sumatran orangutan (*Pongo abelii)* at the Cheyenne Mountain Zoo. The zoo claims that there are 'unique benefits' for orangutans' engagement with art, asserting that painting enriches the orangutans' lives and stimulates their minds. The training process is described thus:

> By giving small treats (reinforcing) each time the artist dipped their brush into the paint, and each time he or she then touched the brush to the paper, the orangutans quickly caught on to the process. (Cheyenne Mountain Zoo, n.d.)

This statement, however, indicates that the inclination of orangutans to produce paintings is not innate; it can be equated with training a non-human to do any party trick, through standard behavioural approaches – that is, through positive reinforcement. It should be noted, however, that the chimpanzee Congo was not 'trained' in this way.

Among non-primates, the activities of the male bowerbird (*Ptilonorhynchus violaceus*) are of interest in this matter and are often referred to in the literature (e.g. Borgia, 1985; Endler, 2012; Uy and Borgia, 2000). It is not unknown for other birds to decorate their nests – for example, Benson (1965: 29) noted that the nests of European Goldfinches (*Carduelis carduelis*) are sometimes deliberately decorated: 'I have seen one draped with fresh forget-me-nots'. However, bowerbirds take this to another level: male bowerbirds create and decorate a structure called a bower; it is not a nest – the important feature of the bower is that it is used only for attracting and mating with females. After mating, females make their own nests elsewhere and raise their offspring by themselves. Males that build superior bowers can mate with up to 10 different females per day; inept bowerbuilders attract no females (e.g. Miller, 2001). Darwin's (1871) view was that bowers evolved as courtship ornaments, through sexual selection by female choice. Miller (2001: 23–24) asserts that this is evidence of the heritability of aesthetic judgement and aesthetic skill – bowers attract females to copulate by advertising male fitness, and they have no other survival function. The aesthetic quality of a bower is clearly an indicator of heritable skill, and so females have evolved the aesthetic discernment to judge bowers in order to get the best genes for their offspring (Miller, 2001: 23–24). Endler (2012: 282), in putting forward the notion that bowerbirds are artists that have an 'innate aesthetic sense', bases his assertions on his own definition of art: 'visual art can be defined as the creation of an external visual pattern by one individual in order to influence the behavior of others'. This, to my mind, is a compelling but not convincing argument, owing to the somewhat narrow if not simplistic definition of art and art-making behaviour.

ART AS AN ADAPTATION

Pinker believes that art is a byproduct of three other adaptations; namely, the hunger for status, the aesthetic pleasure of experiencing adaptive environments, and the ability to design artefacts to achieve desired ends. Pinker (in Boyd et al., 2010: 128–129) famously asserted that while humans enjoy strawberry cheesecake, it is not because we evolved a taste for it:

> of agreeable stimuli which we concocted for the express purpose of pressing our pleasure buttons. Pornography is another pleasure technology […] I will suggest that the arts are a third.

Dissanayake (1995a, b, 2008) argues eloquently that (an adequately defined concept of) art behaviour can be shown to be adaptive – that is, evolved. She coined the term 'making special' in order to define those aspects of human behaviour that are concerned with what we might loosely call art activities. Her principal argument revolves around the notion that 'making special' is an aspect of human behaviour, which, in communal, multi-modal performance of ceremonial rituals, evolved to serve the survival needs of both the individual (allaying anxiety) and the group (fostering group cohesiveness). In doing so, she rejects the idea that art is an evolutionary byproduct or 'spandrel'.

It is important to note that for 'art' to be considered an adapted trait in hominins, it should have a demonstrable function that adds reproductive or survival value that is heritable. If we consider 'art' to be the bringing together of skill, expression, and imagination, then storytelling is one area that could be seen to be adapted. I offer the theory here that storytelling, which is said to be universal, is usually accompanied by visual form, perhaps through dance and spectacle, but more often perhaps through illustrations. I suggest it highly unlikely that the images found at Lascaux, for example, and many other much earlier sites, were independent of any other activity. Imagination can be associated with the capacity for symbolic thinking. It is thought that such thinking evolved in early hominins, evidenced by such things as ritual burials and, more obviously, in petroglyphs and cave paintings. Miyagawa et al. (2018) examined the relationship between symbolic thinking and the emergence of language with reference to prehistoric cave paintings. They note that certain genes are implicated for externalised communication forms in mice and songbirds and for speech in humans, but only modern humans have art and language. They ask if there is a genetic basis for this, noting that there is a gene variant absent in early hominins such as Denisovans and only occurring in modern humans; we can speculate that similar genetic change may have given rise to the multi-modal art that occurred all over the world alongside language.

Tooby and Cosmides have written extensively on aspects of evolutionary psychology; of interest here is their 2001 article addressing evolutionary aesthetics, which focuses, among other things, on how humans have evolved to engage in play and how we can distinguish between fictitious and non-fictitious material. This is a useful area to explore as it relates directly to the notion that art-making in one form or another evolved. They argue that

> the human mind is permeated by an additional layer of adaptations that were selected to involve humans in aesthetic experiences and imagined worlds, even though these activities superficially appear to be nonfunctional and even extravagantly nonutilitarian. (Tooby and Cosmides, 2001: 11)

In doing so, they underline their position that the various phenomena that constituent art behaviour and aesthetic awareness are in some way evolutionary adaptations. Seghers (2015), in his critical review of the evolutionary psychological study of art, contends that in categorizing art as an adaptation, one needs, in principle, to assume that the ability to make art has a genetic basis. Implicit within Seghers' review is the notion that the current state of genetic research does not allow for much speculation about adaptions, as there is very little clarity about which traits are, supposedly, adaptive.

Anthropological research on contemporary hunter-gatherers has found evidence to support the idea that imaginative storytelling may help to solve so-called 'problems of co-ordination' in hunter-gatherer societies, in order to promote cooperation. Smith et al. (2017) proposed that storytelling may function in hunter-gatherer societies as a way of communicating and promoting social

norms, thereby co-ordinating social behaviour and promoting cooperation. They tested whether the presence of skilled storytellers in a Filipino hunter-gatherer population known as the Agta predicted levels of cooperation, through comparing at least 18 separate groups. They found that overall levels of cooperation were higher in camps with a greater proportion of skilled storytellers. More importantly, as far as the present argument is concerned, skilled storytellers were found to be preferred social partners, both in terms of being selected as future campmates and receiving resources in the cooperative game. The research group found that skilled storytellers were preferred as social partners over skilled foragers, despite the fact that food-sharing is an everyday occurrence in Agta society.

Skilled storytellers were found to have increased reproductive success relative to unskilled storytellers, with an average additional 0.5 living offspring. By demonstrating that skilled storytellers receive more social support and have increased reproductive success, the research of Smith et al. (2017) provides some support for the notion that imaginative creative activity is adaptive and that one of the adaptive functions of storytelling among hunter-gatherers may be to facilitate cooperation.

INDIVIDUAL DIFFERENCES

From my experience as an artist and informed by my observations of others in my capacity as an educator, I contend that art-making or at least creating aesthetic significance is an innate, heritable, human trait. When making art or when involved in some making activities, one draws upon a range of faculties, dispositions, experiences, and skills; I suggest that these inherited traits are brought together to a greater or lesser extent according to individual differences. Broadly speaking, art behaviours – creating and conferring aesthetic significance – appear to be universal; this being so, such behaviours may be the result of evolved characteristics. Morriss-Kay (2010: 158) notes that:

> creation of images from the imagination, or 'the mind's eye', required a seminal evolutionary change in the neural structures underpinning perception; this change would have had a survival advantage in both tool-making and hunting.

She continues with the assertion that while the cognitive ability to create art forms that are separate from the body originated in Africa, this ability may have begun at different times in genetically and culturally distinct groups around the world. Importantly, she states that at all stages in the evolution of artistic creativity, stylistic development must have been due to rare individuals with particular skills. She draws attention to the development of individual humans:

> Babies, like human ancestors, are born with a greater or lesser potential for artistic creativity. As they grow older, some would never even try if not taught, whereas others are precociously gifted. (Morriss-Kay, 2010: 174)

Those advocating the notion that art-making evolved as a result of sexual selection do so on the basis of taking a particular view of the nature of art; this brings us back to the importance of having an appropriate and adequate working definition. There might be some merit in the notion that an individual who displays, among other things, skill and creativity would be preferred as a sexual partner over someone who did not possess such skills. However, to assert that art-making capacities evolved as a result of adaptation may be over-simplifying a view of complex and inter-related phenomena.

IMPLICATIONS FOR EDUCATION

It would be remiss of me, as someone who has spent many years actively involved in

education in different capacities, to not consider how the foregoing might have some impact upon educational policy. The academic study of education has, not surprisingly, strongly resisted ideas relating to heritability and any notion of individuals being born with differing cognitive abilities. Nevertheless, developments in neuroscience and other disciplines have shown, as Pinker (2003) eloquently argued, that humans are not born as a 'blank slate'.

My contention is that the capacities to create and confer aesthetic significance are characteristics we are all born with. This being the case, it is incumbent upon those responsible for organising state education to facilitate through curriculum design the means by which young people can fulfil their natural creative desires. As I have noted elsewhere (Hickman, 2016), where opportunities for creating and conferring aesthetic significance are curtailed, downplayed, or absent, people will be variably frustrated and unfulfilled. A nation's education curriculum is a hotly contested area, with these and other academic subjects vying for more time and resources. There is no shortage of vocal advocates for the arts, with some citing spurious research about the cognitive benefits of arts education or, more sensibly, advocating a balanced educational diet. What is clear to me is that people, especially the young, need opportunities to make, to create, and to appreciate and engage with, in an informed way, their aesthetic environment.

While we cannot be certain about the evolutionary basis of what is known as 'art', we can say with some certainty that hominins have had the capacity to create and confer aesthetic significance for a very long time. Creating aesthetic significance involves a search for truth and as such is one of the highest forms of organisation that involves a physical act into which emotive meaning has been inserted and that can be drawn out by another intelligent being – this being the case, the act of visual meaning-making encapsulated by the concept 'art' remains, for the time being, a uniquely human activity. In due course, we may discover that our ancestors developed aesthetic consciousness at a much earlier stage than we currently understand; of greater importance is the prospect that other creatures with whom we share this planet will also be understood to have the capacity for what we, in shorthand, can term 'art'.

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