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ART TO ATTRACT MATES

WHY DID ART EVOLVE?

The question seems simple. But it can't be answered cogently without playing by the rules of modern evolutionary theory.¹ If you don't play by those rules, you're free to dream up any origin myth that seems appealing. Many folks have. Typical art origin myths offer a heady mix of neuro-babble, paleo-sentimentalism, artwank pretentiousness, and naïve group selection.² However, if you want the right answer, rather than just a cute story, you have to dig deeper.

BUT WHY DID ART EVOLVE, REALLY?

Let's start with a simple point: in biological terms, human art is just another 'signalling system', like bee dances, bird songs or gorilla chest-thumping. It's much more complicated, but the signalling principles are the same. Over the last forty years, evolutionary biologists, anthropologists and economists have developed a cool field called 'signalling theory' that describes how signalling systems work, and what counts as a credible explanation for their emergence. It's a good theory, and it's worked really well to illuminate animal communication in thousands of species. If a theorist isn't invoking signalling theory when talking about the evolution of a signalling system, like human art, you know they're trying to spin a rivulet of feculence into a pearl necklace. Don't buy it.

In any signalling system, a set of 'signalers' (e.g. artists) evolve the abilities and motivations to create a set of 'signals' (e.g. artworks) to influence the behaviour of a set of 'receivers' (e.g. the art viewers and artist admirers).

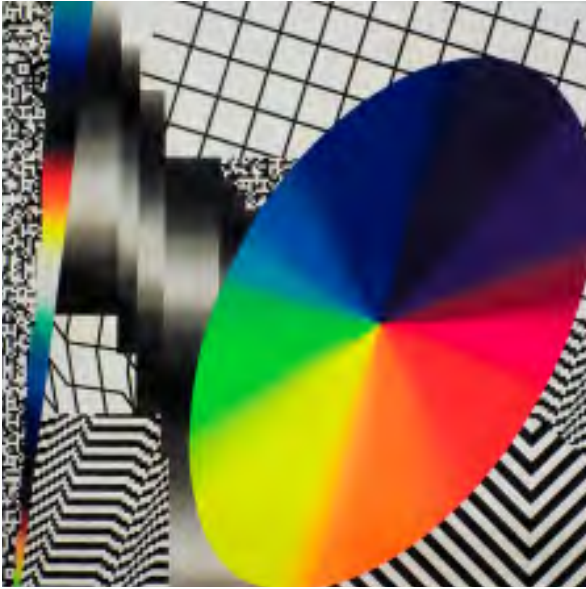
Here's the thing: it's usually much harder to explain why the signalers bother to send the signals than to explain the 'receiver psychology' of why onlookers bother to pay attention to the signals. Receiver psychology is easy. It starts out as just whatever set of brain biases exist in your species: the perceptual, cognitive, emotional, social, sexual and ideological sensitivities that influence your aesthetic tastes and preferences.

We Share Our Chemistry with the Stars
(AJ 280R) DIL2214
2009
Marc Quinn

Receiver psychology. Human eyes serve two functions in mate choice: as perceptual systems, they guide visual preferences for faces, bodies and artefacts, but as objects of sexual selection, the white sclera reveals physical health, the irises diversified in colouration in different populations (possibly through runaway sexual selection), and subtle muscle tensions around the eye reveal emotions, social intelligence and mental health.

¹ Geoffrey F. Miller, 'Aesthetic fitness: How sexual selection shaped artistic virtuosity as a fitness indicator and aesthetic preferences as mate choice criteria', *Bulletin of Psychology and the Arts*, vol. 2, 2001, pp. 20–25.

² Catherine Driscoll, 'The bowerbirds and the bees: Miller on art, altruism, and sexual selection', *Philosophical Psychology*, vol. 19, 2006, pp. 507–26.



If you argue that ‘art is just the cheesecake of the mind’, then you’re focused only on receiver psychology and our sensory biases. Cheesecake tastes good because we evolved tastes for fat and sweet; art looks good because we evolved visual systems for orienting towards objects, people and landscapes that show strong cues of novelty, distinctiveness and relevance to fitness.³ Fair enough—but you haven’t explained why signallers make art. You’ve explained the consumers but not the marketers, the groupies but not the rock stars. Likewise, if you argue that ‘art arises from the visual system’s intrinsic pattern-detection abilities’ or some such, you’re equally focused on receiver psychology.

Receiver psychology is fun to analyse—what makes something great ‘eye candy’? You can bring the whole armamentarium of the behavioural sciences to bear on understanding how people’s minds and brains respond to various aesthetic stimuli. You could get big neuroscience grants to show people Rubens versus Rothkos in fMRI machines and see which brain areas light up.⁴ You could wire museum-goers up to mobile psychophysiology devices to assess galvanic skin responses (sweats, palpitations, panic) when viewing German Expressionism.⁵ You could study how people with autism versus paranoid schizophrenia respond to Marina Abramović videos. You could assess the genetic overlap between preferences for Thomas Kinkade’s real kitsch and preferences for Jeff Koons’ ironic kitsch in a large sample of Swedish twins.

Optichromia 14
2015
Felipe Pantone

Cheesecake of the visual cortex? Non-representational art that includes strong contrasts, crisp line segments, depth cues and saturated colours could be interpreted as mere ‘eye candy’ that plays upon receiver psychology, stimulating key regions of the visual cortex. However, from Bridget Riley’s Op Art onwards, it takes considerable skill to fashion an artefact out of canvas and paint that can achieve these effects. By focusing on the skills required for art making rather than the mechanisms involved in vision, we can reinterpret an apparently arbitrary collection of strong visual stimuli as an impressive—and attractive—display of creativity and virtuosity.

Le Due Luci
2012
Roberto Bernardi

This photorealistic painting could be construed as literal eye candy, but that would be overlooking the great skill required to capture these nine treats with brush and pigment—especially the play of light on the cellophane wrappers.

3 Geoffrey F. Miller, ‘Reconciling evolutionary psychology and ecological psychology: How to perceive fitness affordances’, *Acta Psychologica Sinica*, vol. 39, 2007, pp. 546–55.

4 Steven Brown, Xiaoqing Gao, Loren Tisdelle et al., ‘Naturalizing aesthetics: Brain areas for aesthetic appraisal across sensory modalities’, *NeuroImage*, vol. 58, 2011, pp. 250–58.

5 Wolfgang Tschacher, Steven Greenwood, Volker Kirchberg et al., ‘Physiological correlates of aesthetic perception of artworks in a museum’, *Psychology of Aesthetics, Creativity, and the Arts*, vol. 6, 2012, pp. 96–103.



Affen als Kunstrichter (Monkeys as Judges of Art)
1889
Gabriel von Max

The limits of receiver psychology. Another problem with the eye candy theories of art making is that closely related primates with very similar visual systems just don't respond to artistic images or sculptures the way that humans do—with an eye for the skill, intelligence and creativity behind the art-making process.

Painter's Honeymoon
c. 1864
Frederic Leighton

The reproductive success of male artists. A young bride admires her new husband's latest work. I liked this image enough to use it on the cover of my book *Mating Intelligence: Sex, Relationships, and the Mind's Reproductive System*.





Two Lovers
c. 1800–25
Yanagawa Shigenobu

The sexual selection theory of art making is about the evolutionary functions of art, not about the content of art. Actually, explicit sexual content is often better explained by the eye candy theory, because it's usually produced for males to fantasise about in private, not to attract mates of either sex. Many artists across cultures have supplemented their income by producing erotica, but are often somewhat embarrassed to produce it—it's the opposite of a status-enhancing public signalling strategy.



The Artist's Wife, Emma, on Her Wedding Day
1853
Ford Madox Brown

After his first wife's death, Brown (1821–1893) eloped with his model Emma Hill (1829–1890) in 1849, and their first child was born in 1850. Three years later, they wed. Her expression seems sleepily postcoital.

Au Revoir Zaire
1998
Walton Ford

A male African grey parrot—one of the world's most intelligent birds—creates an elaborate fruit-baited trap to copulate with a gullible female. The eye candy theory of art evolution has this problem: any arbitrary aesthetic preference can be exploited to distract, manipulate and seduce the receiver. Unless the aesthetic response benefits the receiver on average, natural selection would quickly eliminate such vulnerabilities. Females who ignore the eye candy would escape the rape and the noose, and would leave offspring less easily bedazzled. Signalling systems are evolutionarily stable only when they bring net fitness benefits to both signallers and receivers.





However, none of that receiver psychology matters very much for explaining the signaller side of the equation. The key question in any evolved signalling system is: *why do the signallers bother?* Why do they invest their limited time, energy and risk in growing ornaments, making sounds, or creating works that receivers might enjoy? Once signallers are giving away gobs of potentially useful information to anyone within visual range, it's not surprising that receivers evolve to pay attention to the new info-flood.

Here's an example. Female bowerbirds have eyes and brains tuned to perceive visual depth using convenient cues; this makes their depth-perception systems vulnerable to perspective illusions. You could do perceptual psychology studies on this part of their receiver psychology, if you wanted. But males of one species, the great bowerbird (*Chlamydera nuchalis*), have evolved to build their courtship bowers to create an ingenious forced-perspective illusion when females view the bower's court through the central avenue, making the male look bigger when he displays in front of his bower. The quality of each male's forced-perspective illusion predicts his mating success,⁶ so females are not just fooled by the perspective illusion; they implicitly use the illusion's quality as a cue of the male's mate value. And the males take years to learn how to construct the most effective forced-perspective illusion.

So we should rephrase our central question: not why receivers evolved to *respond* to art, but why signallers evolved to *make* art.

HOW DID ART MAKING EVOLVE?

A full century before signalling theory, back in 1871, Charles Darwin proposed a damned good theory of art making. He didn't get it 100 per cent right, but I think he got it at least 80 per cent right.

Darwin suggested that 'art' emerged long before humans. It arose to attract sexual partners, by showing conspicuous beauty, skill and creativity. From the sexual ornaments of iridescent beetles to the courtship architecture of bowerbirds, animals grow art on their bodies or make art in their environment to signal their health, resourcefulness, intelligence and/or general fitness. Aesthetic ornamentation reveals good genes, good bodies and good brains.⁷

However, Darwin's colleagues could not stomach the idea that the highest achievements of human visual culture could emerge from mere 'mating instincts', because they underestimated the complexity of prehistoric mating and the aesthetic discernment of prehistoric mates. A combination of Victorian misogyny and cultural pretentiousness kept them from seeing the mate-attraction functions of art. With sexual selection banished from the explanatory repertoire of evolutionary aesthetics, art had to arise either through natural selection for survival, or as a non-adaptive side effect of other biological or cultural processes. After the rise of Modernist art and architecture in the early twentieth century, aesthetic theorists doubled down on rejecting the concepts of 'beauty' or 'skill', so the challenge of explaining the evolution of animal beauty or human art-making talent seemed *passé*.

A great bowerbird's forced-perspective illusion

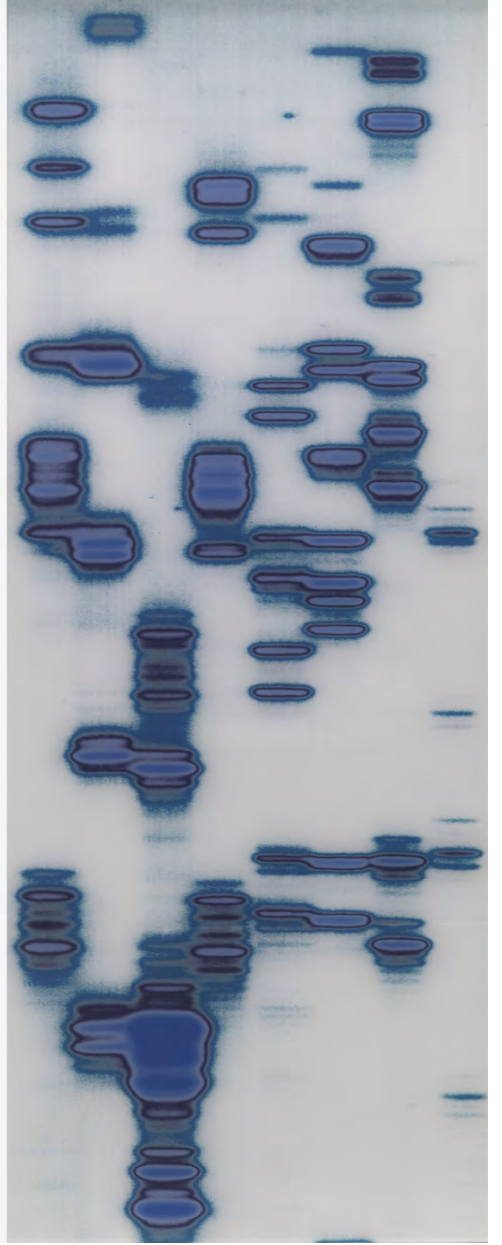
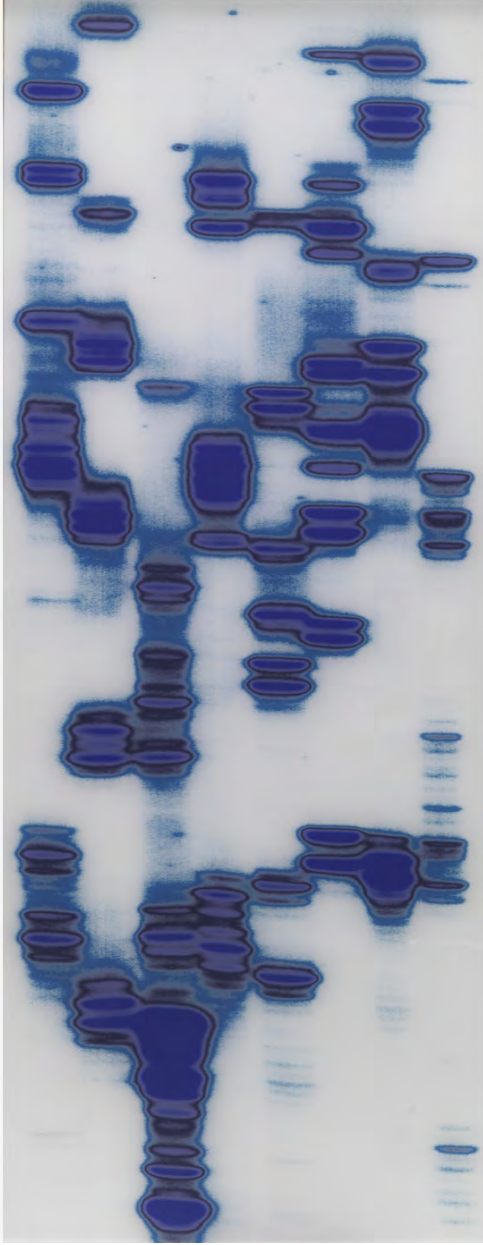
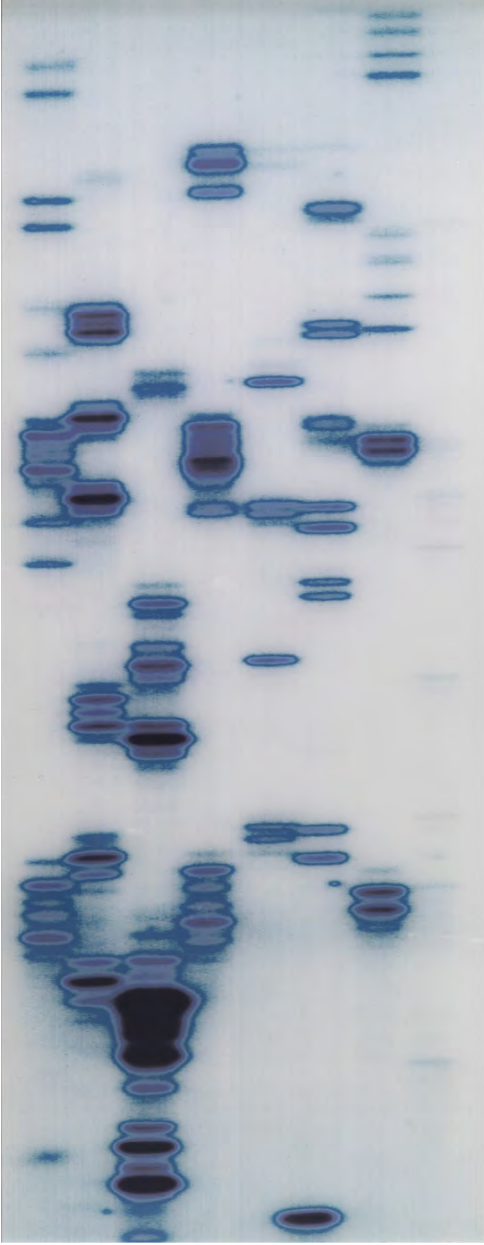
On the left, the male bowerbird has arranged stones behind his nest with the largest ones closest to the (female bowerbird) viewer, and smaller ones behind, to increase his apparent size when he displays in front. He doesn't need to consciously understand the female brain's depth-perception system; he just evolved to make his art installation play upon her receiver psychology. On the right, a naughty scientist has rearranged the bird's stones with the smallest in front and the largest in back, negating the depth illusion. The bowerbird will quickly rearrange the stones to restore the illusion and his own mating prospects.

Sperm Gauge
2005
James Vaughan

If male art making reveals genetic quality, then male-made art is basically a gauge of sperm quality. Females choosing among male suitors confront a cabinet of curiosities—behind each man's artefacts are the sperm he offers; behind his sperm are the expected future progeny he could sire.

⁶ John A. Endler, Julie Gaburro & Laura A. Kelley, 'Visual effects in great bowerbird sexual displays and their implications for signal design', *Proceedings of the Royal Society B*, vol. 281, 2014, e20140235.

⁷ Dahlia W. Zaidel, Marcos Nadal, Albert Flexas et al., 'An evolutionary approach to art and aesthetic experience', *Psychology of Aesthetics, Creativity, and the Arts*, vol. 7, 2013, 100–09.



Glenn, Dario, and Tyrone

1998

Iñigo Manglano-Ovalle

A chromogenic print of genotypes from three men. DNA variants appear as abstract aesthetic patterns, symbolising heritable variation in creativity, virtuosity, intelligence and fitness. Since prehistoric humans lacked the technology to genotype potential mates directly, they had to rely on indirect signals of genetic quality—such as art-making ability.



Examples of evolved aesthetic ornamentation:



LEFT TO RIGHT

Wing of a Blue Roller
1512
Albrecht Dürer

A masterpiece of naturalistic observation and watercolour skill. Rollers get their name from the aerial acrobatics they perform during courtship, displaying the manoeuvrability they need to catch flying insects on the wing, and showing off their colourful wings to potential mates. This same year (1512), Dürer starting working on his *Four Books on Human Proportion* (*Vier Bücher von Menschlicher Proportion*), which advocated three aesthetic principles: *Nutz* (function), *Wohlgefallen* (naïve approval), and *Mittelmass* (the happy medium), emphasising how the artist can create beautiful images using each.



The Island
2009
Walton Ford

The nightmare of natural selection. Darwin realised that all populations can undergo exponential growth so that, whatever abundance an environment offers for a few generations, any population will quickly reach carrying capacity. Here some Tasmanian tigers (*Thylacinus cynocephalus*) are fighting over the last few lambs on an overcrowded island. Humans in turn hunted these carnivorous marsupials to extinction by 1936. Competition for survival favours practicality rather than beauty, efficiency rather than extravagance, species-typical adaptations rather than conspicuous individual differences, and functional innovation rather than playful creativity—so is rather unlikely to explain human art.

In the Night Garden: Hale-Bopp
2012
Marc Quinn

Plants evolved flowers as sexual ornamentation to attract pollinators. Here Quinn uses psychedelic representational flair, surreal composition and large scale to attract and impress the human viewer.



Sexual coercion versus female choice:



Salome
c. 1900
Pierre Bonnard

Different takes on women beheading men. With her erotic dancing, Salome seduced Herod, who promised her anything she wished; she demanded the head of John the Baptist on a plate. Here Salome's male kinsmen have already conquered the hostile forces of nature, symbolised by the tiger pelt rug. This gives her the freedom to favour highly encephalised males. She doesn't care about the rest of his body, and neither does he, apparently. It's the heritable brainpower that she's after. Her fingers seem to be measuring the size of his prefrontal cortex, a region strongly implicated in general intelligence and creativity.

Judith Slaying Holofernes
1611–12
Artemisia Gentileschi

Women exercising their power of mate choice. The Assyrian general Holofernes wanted sex with the beautiful widow Judith on the night before he planned to destroy her city of Bethulia. She got him drunk and sawed off his head, saving her virtue and her home. Artemisia Gentileschi (1593–1653), the best female Baroque painter, painted this around age nineteen. She offers an especially gritty, bloody and dramatic scene compared to earlier sanitised and eroticised versions. Judith and her maid hold down Holofernes with a businesslike determination, while he struggles not to bleed out. Every rapist has to sleep some time, and then he's vulnerable to moralistic punishment by his victims and their allies. Prehistoric female alliances helped women maintain their power of mate choice against male sexual coercion, giving sexual selection the elbow room to shape kinder, gentler, more creative traits such as art making in both sexes.





Eros
c. 1921
Solomon J. Solomon

Honest courtship. Eros, the embodiment of love, courts a fertile but half-reluctant woman. He seduces through a combination of affectionate foreplay, playful domination and visual ornamentation—white and cerulean wings unfurled, arms draped in gold.

Ajax and Cassandra
1886
Solomon J. Solomon

Sexual coercion circumvents female choice. In Greek myth, Apollo blessed the Trojan princess Cassandra with the power of prophecy in an attempt to seduce her, but she refused his advances, so he cursed her never to be believed. Later, during the fall of Troy, the Locrian Ajax abducted Cassandra from the Temple of Athena and brutally raped her. For desecrating her temple, Athena, with the help of Zeus and Poseidon, destroyed most of the Greek fleet returning home from Troy, including sucking Ajax up in a furious whirlwind, penetrating his chest with bolts of magic fire and throwing him down to be impaled upon sharp rocks. Ouch. Powerful men can use sexual coercion to circumvent female mate choice—but then females can band together with even more powerful men to seek revenge and deter future rapes. Most Victorian biologists (other than Darwin) wrongly assumed that prehistoric males could sexually coerce females without risk or accountability, such that sexual selection through female choice could not have shaped art, music or language.





Pan
1898
Sydney Long

This classic nymphs-and-fauns pastoral scene symbolises prehistoric multi-male, multi-female hunter-gatherer clans. Within such groups, sexual selection typically entailed mutual mate choice and mutual courtship by both sexes. However, males had sexual incentives to invest more time and energy in public broadcasting of their aesthetic skills, as with the faun playing music. Naïve group-selectionist accounts would interpret the musical effort as providing a common good to the dancing group, perhaps to promote clan solidarity. By contrast, the sexual selection model would focus on the smitten groupie lying on her front, the way her erotic attention is locked onto the musician and the impending evening's polyamorous-yet-choosy orgy. The fauns are lusty beasts from the waist down, but creative artists from the neck up.

Leda and the Swan
2004
Fernando Botero

In Greek myth, Zeus disguises himself as a swan and seduces or rapes Leda, the queen of Sparta, siring Helen of Troy. This became a popular theme in the Italian Renaissance (Leonardo, Michelangelo, Correggio), since swan-woman copulation was seen as less racy than man-woman copulation. Botero made other, rape-ier versions, in which Leda's face turns away from the swan's head, or the swan pounces on Leda's shoulders as if about to copulate with the back of her neck. Here, though, the sex seems consensual, with intense swan-human eye contact, and an impending kiss. Leda cups her breasts as if to signal her fertility to the king of the gods, and her body shows a voluptuous sturdiness well suited to birthing demigods.

Untitled
2006
Balint Zsako

Beyond sex, almost everything else is hot air. Traditional representational art focuses on the face and upper torso. Here, only the genitals and breasts are depicted, with the rest of the phenotype a vague hot mist. From the gonads' point of view, the rest of the body is just a means to a reproductive end.



With the renewed application of evolutionary theory to explain human behaviour from the 1970s onwards, there have been dozens of speculations about why art arose during human evolution. Most of those speculations fail the most basic criteria for evolutionary theories: they don't identify the specific selection pressures that favoured art making or art judging, or the adaptive functions that art served, or the concrete fitness payoffs for making art (in terms of survival and reproduction). Some of these speculations are heartwarming and raise the social and moral status of art makers and art appreciators, so feel ideologically cosy and comforting. Yet most strike me as Just-So storytelling and wishful thinking because they don't get down to brass tacks. They don't address this core issue: how did new genetic mutations for art-making motivations and abilities actually spread among our ancestors, given the real biological costs of art making in terms of energy, materials, time and skill-acquisition?

Amotz Zahavi made some progress in 1978 by framing artistic phenomena in signalling-theory terms, with his 'handicap principle'. He argued that many aspects of ornamental art and decorative patterning are costly, hard-to-fake signals of the artist's skill. In particular, many decorative patterns make comparative evaluation by observers easier; for example, dots in circles that make it easier to assess radial symmetry; stripes and bars that make it easier to assess body size and proportions. Zahavi wrote presciently:

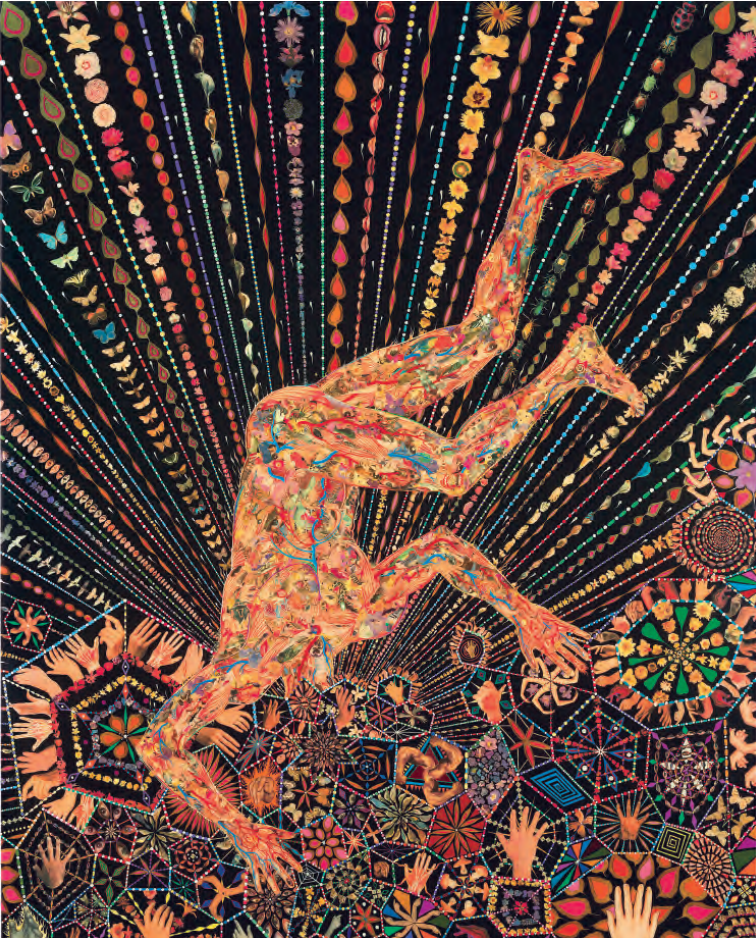
Human society is competitive, so people might be expected to use decorative patterns to advertise quality. I believe that a particular artistic investment by an artist to decorate a product may be understood as a consequence of his attempts to advertise the quality of his product. It may also be an advertisement of the artist's own artistic qualities. And the ability we have to understand art may have evolved as a consequence of our striving to assess differences in quality using biologically important signals. The theory of optimal decorative patterns may thus form a biological basis for the ultimate 'advantage' of art,⁸



The Way of All Flesh
2013
Marc Quinn

Dutch model Lara Stone, heavily pregnant, reclines against red meat. During human evolution, better big-game-hunting abilities helped fuel the increased energy demands of pregnancy, lactation and larger brains, allowed women to pump out more babies faster than other great apes can afford to do, and gave humans more leisure time to develop the arts than a vegetarian diet would have allowed. Meat, sex and art come together.

⁸ Amotz Zahavi, 'Decorative patterns and the evolution of art', *New Scientist*, vol. 80, 1978, pp. 182–84.





Organism
2005
Fred Tomaselli

Psychedelic biophilia: sexual selection turns cognitive as human brains plunge into a more conceptual world. In the background, standard visual ornamentation radiates outwards in every direction—flowers, birds, beetles, butterflies—along with the sperm that allude to 'good genes' inheritance. In the foreground, a human figure falls from the naive grace of physical ornamentation into an odd new world of cognitive ornamentation. His head has dissolved into networked polygons filled with symbols of uniquely human aesthetic quirks: hands (for art making), cannabis leaves and mushrooms (for inspiration) and clusters of eyes (for judging art in a hypersocial tribal context). The signalling principles are the same, but this 'cognitive turn' proves more confusing to everyone concerned, and hides its evolutionary tracks better.

Fröschenpaar (Frog Pair)
1989
Renate Rabus

A copulating pair of granular poison frogs (*Oophaga granulifera*) from Central America. Less than an inch long, these frogs evolved a bright colouration mostly as warning to predators that they are poisonous, increasing their survival chances. Warning colouration obeys many of the same costly signalling principles as sexual ornamentation, but tends to occur in both sexes equally, rather than being more conspicuous on males.

My Lonesome Cowboy
1998
Takashi Murakami

Aesthetic signalling is mostly a matter of showing off the quality of one's genes in a conspicuous, stylised, costly way. Here a monumental young manga hero transforms his copious masturbatory ejaculate into an artfully spiralling lasso of love, to intrigue and bind onlooking females.





On the Origins of Art: Female Chooses Male based on Aesthetic Selection I and II (Maratus volans and Maratus splendens male and female) (stills)
2016

María Fernanda Cardoso

A tiny peacock spider (*Maratus volans*) displays his tail-flap to attract a female.

Venus of Lespugue (replica)

Original: Lespugue (Haute-Garonne), France, Gravettian period, 26,000–24,000 BCE

Made about 25,000 years ago in the Pyrenees, about 15 centimetres tall, carved from tusk ivory. It also illustrates signalling on two levels: the female morphology represented, and the artistic skill to represent it. This Venus is one of the most striking, with highly exaggerated fertility indicators including large pendulous breasts, a steatopygous butt, fat thighs and pubic fat, but no facial features or hair. Archaeologists often claim Venus figurines are 'fertility symbols' used in prehistoric magic rites, but a more parsimonious explanation would be Pleistocene porn. The bilateral symmetry is very accurate, suggesting an emphasis on conspicuous precision and fine craftsmanship.

Fertility figure

South Caspian region, North West Iran, c. 1000 BCE

About 24,000 years after the Venus of Lespugue, here's another stylised female figure, with exaggeratedly low waist-to-hip ratio indicating high fertility; perky little breasts cupped by stick-arms, indicating no previous children; and simplified facial features.



Since my book *The Mating Mind* in 2000, I've argued that Darwin's hypothesis about art was basically right.⁹ Every biologist knows that sexual selection through mate choice favoured most of the visual beauty in nature, from the tail-flaps of peacock spiders to the plumage on birds of paradise. I just think we can take sexual selection about 20 per cent further, to explain human art-making instincts as well. And we have new scientific insights for doing that. We have deeper insights into animal communication theory to explain how art-making ability can work as a hard-to-fake signal of biological excellence. We have new archaeological evidence on the prehistoric antiquity of beautifully crafted tools, weapons, body ornamentation, clothing, figurines and cave paintings. We have new psychological evidence on which heritable traits—physical, mental, emotional and moral—can be signalled reliably through good art. And we have new models of sexual selection in semi-monogamous species like ours in which both males and females choose their mates and form longer-term pair bonds. We can draw not just from Darwin, but from other evolutionary aesthetic theorists such as Nietzsche, Veblen, Boas, Gombrich and Zahavi. We can also draw from a century of social progress in which the division between male elite arts and female folk crafts has broken down. Many more women rediscovered their art-making instincts as parts of their own social and sexual strategies.

I think this updated expansion of Darwin's art-through-sexual-selection theory is pretty good at explaining why ordinary children enjoy learning how to draw, paint and dress up (to practise aesthetic courtship skills before puberty), why young single adults enjoy adding visual beauty to their romantic lives in so many ways (to attract partners), and why married adults so often get aesthetically lazy in their dress, decoration and hobbies (to reduce mating effort as parenting effort takes precedence).

Admittedly, my theory is weaker at explaining the more pretentious and counterintuitive forms of elite contemporary art. It can't account for why almost 1 per cent of educated urban adults claim to enjoy abstract art, installation art, art-speak, or *Artforum*. But that doesn't matter. Evolutionary psychologists like me seek to explain the 99 per cent—the normal human interest in beauty, artistic skill, visual creativity and folk arts. I'd rather understand the pop surrealism in *Juxtapoz* than the video installations at Art Basel, because ordinary folks actually *like* and *buy* pop surrealism—and other fun, skilled kinds of representational art. I want to understand the cross-culturally universal forms of artistic passion and skill that provoke spontaneous admiration among ordinary folks. I think the answer is that aesthetic admiration of art shades over into sexual attraction towards the artist—and this has been happening for several thousand generations. We're all descended from artists because art was sexy and art was romantic.

Note that art making is much more ancient than previously believed.¹⁰ It is likely to be a long-refined biological adaptation intrinsic to human nature, rather than a recent cultural invention. Until about 2000, archaeologists focused on European cave painting sites and Venus figurines associated with the 'Upper Paleolithic revolution' about 30,000 years ago, and claimed little evidence of art making before that. However, more recent finds push art making back almost ten times further. By 500,000 years ago, humans were creating Acheulean hand axes with carefully exaggerated symmetry,¹¹ more

Princess Stephanie's Bird of Paradise
(*Astrapia stephaniae*)
1917

Marian Ellis Rowan

Women rediscovering their art-making instincts. Here a drab female carefully inspects a flamboyant male—all as painted by a talented female natural history artist. In humans, unlike most other species, both sexes create aesthetic ornamentation.

Un moulage sur nature (A Casting from Life)
1887

Édouard Joseph Dantan

Representational painting reveals the methods of representational sculpture. An unusually impressionistic work from a master of technical classicism, depicting an artist and his assistant removing a plaster cast from a model's leg.

⁹ Geoffrey F. Miller, *The Mating Mind: How Sexual Choice Shaped the Evolution of Human Nature*, Doubleday, New York, NY, 2000.

¹⁰ Gillian M. Morriss-Kay, 'The evolution of human artistic creativity', *Journal of Anatomy*, vol. 216, 2010, pp. 158–76.

¹¹ Derek Hodgson, 'The first appearance of symmetry in the human lineage: Where perception meets art', *Symmetry*, vol. 3, 2011, pp. 37–53.



LEFT TO RIGHT

Red Hill and White Shell
1938
Georgia O'Keeffe

From red ochre to abstract symbolism. A monumental white spiral shell is juxtaposed against an undulating hillscape the colour of red ochre. The protruding shell evokes a breast, a clitoris, a skull, an egg, or the visible white sclera of the human eye—but its depth is ambiguous, and it could equally be seen as a spiral receding into the red hillside—a virginal vagina leading back to the uterus and ovaries, or a twisting vas deferens leading back to the epididymis and testicles.

Lower Paleolithic hand axe
Olduvai Gorge, Africa

An unusually large hand axe, 29 centimetres long, 3 kilograms in weight. It would have been an impractical tool for most purposes, and may represent one of the first examples of art for art's sake, simply showing off the toolmaker's skill.

Hand axe
France, Acheulean, 500,000 BP

A pretty good hand axe made from strikingly beautiful stone.

Red ochre has been used for body ornamentation for up to 250,000 years. Here a young woman from the Himba people of Namibia wears red ochre paste on hair and skin.







precise than necessary for killing and butchering animals. By 200,000 years ago, Neanderthals in northern Europe¹² and humans in South Africa¹³ were using red ochre, probably for body ornamentation. By 100,000 years ago, humans in South Africa had red-ochre-processing workshops including abalone shell containers, grindstones and hammerstones to produce body ornamentation pigments on a large scale;¹⁴ similar workshops have been found in the Middle East 92,000 years ago.¹⁵ By 82,000 years ago, humans in North Africa were drilling holes in shells and decorating them with red ochre, presumably for jewellery.¹⁶ Humans have probably been using tattoos, scarifications and piercings as signals of biological quality for tens of thousands of years.¹⁷

Only much later did art come to serve hundreds of other social, familial, cultural, economic and ideological functions. Of course those functions are important too—but this exhibition focuses on the evolutionary origins of art, not the cultural applications of art.

HOW DO ARTWORKS FUNCTION AS EXTENDED PHENOTYPES?

Apart from growing sexual ornaments on their bodies and producing behavioural courtship displays, many animals evolved to create decorations, artworks, constructions, and other physically persistent structures beyond their bodily boundaries, as part of their 'extended phenotypes' to attract mates.¹⁸ Extended phenotypes among prehistoric humans had become quite complex by the time of 'Ötzi the Ice-Man', who lived about 5300 years ago, and whose ice-preserved body was found in the Italian Alps in 1991. When Ötzi died, he was wearing a coat made of alternating light and dark goat-hide strips, goat-hide leggings, deer-skin shoes and a leather backpack, and he was carrying a fine copper-bladed axe, a flint-bladed dagger, a yew longbow and fletched arrows, a tree-bast trapping net, and fire-making tinder and flints.¹⁹ Our modern human extended phenotypes reach far beyond our bodies, and include consumer goods and services such as our clothes, cars, houses, art collections and online dating profiles²⁰—all of which are subject to aesthetic judgement by potential mates.

The Oreads

1902

William-Adolphe Bouguereau

Male mate choice from a sky-river of female fertility. Before Darwin, theorists assumed that physical beauty was the province of the female, with (rich, powerful) males as the choosers. After Darwin, biologists switched to the males display/females choose model of sexual selection. In recent years, a new balance has been struck based on mutual mate choice. From the viewpoint of high-mate-value males like these fauns, sexual selection is what they use to select the most delectable women with the most pleasing physical ornamentation: skin, hair, breasts, buttocks, waists, legs. But from the viewpoint of high-mate-value females, the power of choice remains classically Darwinian—females choosing among males and their aesthetically extended phenotypes.

¹² Wil Roebroeks, Mark J. Sier, Trine Kellberg Nielsen et al., 'Use of red ochre by early Neanderthals', *Proceedings of the National Academy of Sciences*, vol. 109, 2012, pp. 1889–94.

¹³ Curtis W. Marean, Miryam Bar-Matthews, Jocelyn Bernatchez et al., 'Early human use of marine resources and pigment in South Africa during the Middle Pleistocene', *Nature*, vol. 449, 2007, pp. 905–08.

¹⁴ Christopher S. Henshilwood, Francesco d'Errico, Karen L. van Niekerk et al., 'A 100,000-year-old ochre-processing workshop at Blombos Cave, South Africa', *Science*, vol. 334, 2011, pp. 219–22.

¹⁵ Daniella E. Bar-Yosef Mayer, Bernard Vandermeersch & Ofer Bar-Yosef, 'Shells and ochre in Middle Paleolithic Qafzeh Cave, Israel: Indications for modern behaviour', *Journal of Human Evolution*, vol. 56, 2009, pp. 307–14.

¹⁶ Abdeljalil Bouzouggar, Nick Barton, Marian Vanhaeren et al., '82,000-year-old shell beads from North Africa and implications for the origins of modern human behaviour', *Proceedings of the National Academy of Sciences*, vol. 104, 2007, pp. 9964–69.

¹⁷ Sławomir Koziol, Weronika Kretschmer & Bogusław Pawłowski, 'Tattoo and piercing as signals of biological quality', *Evolution and Human Behaviour*, vol. 31, 2010, pp. 187–92.

¹⁸ Franziska C. Schaedelin & Michael Taborsky, 'Extended phenotypes as signals', *Biological Reviews*, vol. 84, 2009, pp. 293–313.

¹⁹ Geoffrey F. Miller, 'Stuff: The bare necessities, then and now', *New Scientist*, no. 2962, March 29 2014, pp. 41–42.

²⁰ Geoffrey F. Miller, *Spent: Sex, Evolution, and Consumer Behaviour*, Viking, New York, NY, 2009.



Other animals have to make rather than buy their extended phenotypes, so their ornamental signals can be very informative about their genetic quality, bodily health, resourcefulness, intelligence and conscientiousness. This is because it can be physically and cognitively demanding to find and transport the required structural and decorative materials, to choose and defend an optimal display location, to compile the materials skilfully into a form that has the structural integrity to persist in a hostile environment, and to manipulate the artwork to display the aesthetic features to attract mates.

Animal artworks have other advantages as mating signals. In a local mating market, all local materials are equally available to all sexual rivals, so they allow observers to separate variation in environment quality (e.g. how many white shells are available for decorating bowers, how much lapis lazuli is available for making blue paint) from variation in individual genetic quality (e.g. how skilfully a bowerbird can arrange shells or a human painter can grind and apply pigment). Artworks also allow animals to show innovation, creativity and a tacit understanding of receiver preferences, as when three-spined stickleback fish construct decorative nests of coloured algae and then choose an optimally contrasting colour of algae to highlight the nest entrance.²¹

Animal artworks can also reliably reveal the animal's bodily size, as when male black wheatear birds carry the heaviest possible stones to ornament their cliffside breeding spots, allowing females to observe their maximum work capacity. These 35-gram birds carry an average of 3 kilograms of stones per mating (like a 90-kilogram man carrying 7700 kilograms of stones up a cliff face), and this intense sexual selection on construction ability has resulted in the largest power output of a muscle ever recorded for any species (400 watts per kilogram).²²

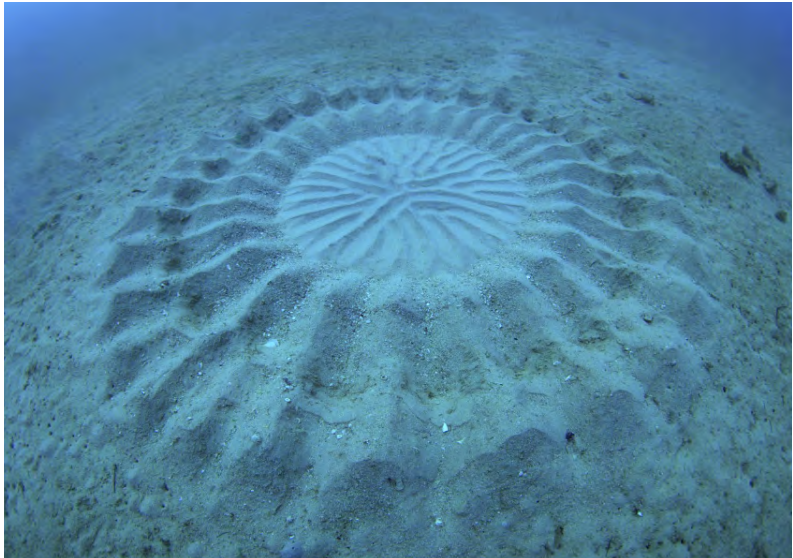
Many extended-phenotype signals show large size, not just as 'supernormal stimuli' exploiting receiver psychology, but using conspicuous waste as a reliable signal of quality and endurance: a 15-centimetre-tall Vogelkop bowerbird typically constructs a branch-and-twig bower at least 1 metre high and 1.6 metres in diameter, analogous to a 6-foot-tall human sculptor building a wooden installation 12 metres high and 18 metres in diameter. However, unlike a peacock burdened by a heavy ornamental train, the creator isn't saddled with the burden of carrying around such an enormous sexual ornament: under threat from predators or rivals, the extended phenotype can be abandoned, and the artist can live on to create another day.

Black wheatear bird carrying material for his art installation to attract a mate.

A Vogelkop bowerbird's large, well-decorated bower attracts mates.

²¹ Sara Ostlund-Nilsson & Mikael Holmlund, 'The artistic three-spined stickleback (*Gasterosteus aculeatus*)', *Behavioral Ecology and Sociobiology*, vol. 53, 2003, pp. 214–20.

²² Manuel Soler, Manuel Martín-Vivaldi, J. M. Marin et al., 'Weight lifting and health status in the black wheatear', *Behavioral Ecology*, vol. 10, 1999, pp. 281–86.



Artworks can be especially efficient signals because they can persist for long periods, outlasting transient courtship displays (e.g. birdsong or human jokes), and the construction skills they embody can be appreciated and remembered by potential mates even in one's absence. Extended phenotypes are also informative about the creator's vigilance, formidability and dominance, because they can be sabotaged or stolen by sexual rivals (as when bowerbirds destroy each other's bowers and steal their building materials and ornaments).²³

The best-studied extended-phenotype signals in other animals that have been shown to attract mates in courtship—and thus the best examples of convergent evolution towards human-style art making—include:

- silk balloons by at least a hundred species of balloon flies (e.g. *Hilara sartor*)
- sand pyramids by ghost crabs (*Ocypode saratan*)
- sand craters by at least twenty species of cichlid fish (e.g. *Cyathopharynx furcifer*)
- flower petal presentations by red-backed fairy wren birds (*Malurus melanocephalus*)
- stone piles at nest cavity entrances by black wheatears (*Oenanthe leucura*)
- bowers of twigs and ornaments by fifteen species of bowerbirds (e.g. *Amblyornis inornatus*)
- elaborate nests by at least seventy species of weaverbirds (e.g. *Ploceus benghalensis*).

This is a very provisional list, as the study of animal artworks from a signalling theory perspective is still in its infancy, and some of the most skilled creators (e.g. crabs, fish, spiders) are under-studied. And as with many sexually selected ornaments, the pheromone-obsessed mammals fall short of birds, fish and invertebrates in the sophistication of their constructions. However, in all cases above, researchers have observed females closely inspecting and comparing male artworks, with direct reproductive payoffs to males who create the best works. So we have examples of sexually selected extended-phenotype ornamental signals in at least two hundred other species that seem functionally analogous to human artworks. That's two hundred more examples of convergent evolution than we see for any other theory of human art evolution.

A female weaverbird inspects a male's nest for structural integrity and aesthetic virtuosity.

A sand crater made by a cichlid fish to attract mates. Its diameter is more than ten times the fish's body length. Good radial symmetry.

²³ Janine M. Wojcieszek, James A. Nicholls & Anne W. Goldizen, 'Stealing behavior and the maintenance of a visual display in the satin bowerbird', *Behavioral Ecology*, vol. 18, 2007, pp. 689–95.



HOW CAN WE TEST THE SEXUAL SELECTION MODEL FOR ART MAKING?

The sexual selection model is eminently testable.²⁴ Indeed, over the last forty years, biologists have developed some pretty good ways to assess whether a trait evolved as a sexually selected signal. For example, if human art making evolved mostly to attract mates, we'd expect it to show most of the qualities below. (I note which predictions have supporting evidence so far, and which remain to be tested.)

Mate preferences for the trait

All else being equal, art making should be favoured in mate choice by both sexes. In a study of 9474 people across thirty-seven cultures, males and females ranked 'creative and artistic' as the seventh and sixth most important trait, respectively, out of thirteen traits—less important than kindness, intelligence or health, but more important than earning capacity, education or religiosity.²⁵ Women's ovulatory cycles also influence their attraction to artistic creativity and skill: women at the highest fertility phase of the cycle preferred poor but talented visual artists over rich but untalented visual artists.²⁶ People should be motivated not just to judge artistic skill passively by observing completed works, but to probe actively, witnessing works-in-progress, assessing romantic bespoke works (e.g. a custom portrait of the beloved), and considering works across a variety of forms, materials and styles. People should feel driven to connect the artwork to the artist, so their extended phenotype illuminates their core phenotype and vice versa. Art makers who can talk articulately about their training, skills, intentions, efforts and aesthetic decisions should be especially attractive, since they reveal high verbal intelligence. As with most behavioural and mental traits, women should be choosier about art-making ability when selecting short-term mates, but men should up-regulate their choosiness about art making when selecting longer-term mates (e.g. men have low standards for intelligence in one-night stands, but they become as choosy as women when selecting a spouse). Given mutual mate choice for art-making ability, we also expect positive assortative mating for the trait:²⁷ couples should correlate for artistic talent and aesthetic sensitivity.

Art making should attract more mates, especially for male artists. Among 236 visual artists, degree of artistic success strongly predicted mating success for males (e.g. number of male artists' sexual partners correlated +.53 with 'time spend on art' and +.45 with 'percentage of income from art'); among female artists there was no relationship.²⁸ In a different study of 708 young adults, males who produced more public creative behaviours (e.g. visual arts, performing arts, writing) attracted more sexual partners, whereas females showed no correlation between creative output and sexual success.²⁹ Also, more neurotic (worried, anxious) men and more schizotypal (eccentric, disorganised) men displayed more creative activity, which led to more short-term mating success, but the neuroticism and schizotypy boosted sexual success only insofar as it led to creative output; no such patterns appeared for women. Madness leads to mating success only if it's linked to creativity, apparently.

FROM TOP

Portrait of the Artist's Husband, Charles Beale, in a Black Hat
c.1670
Mary Beale

Romantic success of the female artist. Mary Beale was the best British female artist of the seventeenth century and an advocate of sexual equality and friendship in marriage. After her husband lost his job as deputy clerk of the patents office, he acted as her adoring business manager. She paints him with startling intimacy and affection.

The Painter Surprised by a Naked Admirer
2004–5
Lucian Freud

Reproductive success of the male artist. Freud, aged eighty-two here, paints himself painting himself with a new would-be lover. Freud sired at least fourteen children with at least six women (two with his first wife, Kitty Epstein, four with Suzy Boyt, four with Katherine McAdam, two with Bernardine Coverley, one with Jacquetta Eliot, and one with Celia Paul).

24 Geoffrey F. Miller, 'Mating intelligence: Frequently asked questions', in G. Geher G. & G. F. Miller (eds), *Mating Intelligence: Sex, Relationships, and the Mind's Reproductive System*, Erlbaum, Mahwah, NJ, 2007, pp. 367–93.

25 David M. Buss, Max Abbott, Alois Angleitner et al., 'International preferences in selecting mates: A study of 37 cultures', *Journal of Cross-Cultural Psychology*, vol. 21, 1990, pp. 5–47.

26 Martie G. Haselton & Geoffrey F. Miller, 'Women's fertility across the cycle increases the short-term attractiveness of creative intelligence', *Human Nature*, vol. 17, 2006, pp. 50–73.

27 Paul L. Hooper & Geoffrey F. Miller, 'Mutual mate choice can drive ornament evolution even under perfect monogamy', *Adaptive Behavior*, vol. 16, 2008, pp. 53–70.

28 Helen Clegg, Daniel Nettle & Dorothy Miell, 'Status and mating success amongst visual artists', *Frontiers in Psychology*, vol. 2, e310, 2011.

29 Melanie L. Beaussart, Scott B. Kaufman & James C. Kaufman, 'Creative activity, personality, mental illness, and short-term mating success', *Journal of Creative Behaviour*, vol. 46, 2012, pp. 151–67.

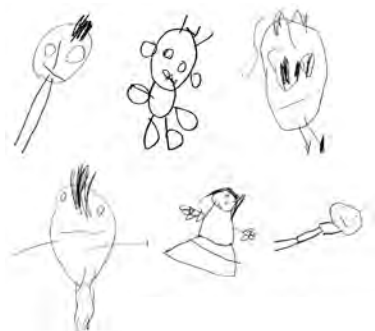


Genetics of the trait: substantial heritability, elusive molecular-genetic basis, inbreeding depression and paternal age effects

If art-making abilities function as indicators of good genes, they should prove heritable in twin and adoption studies, with artistic ability running in families for genetic and not just environmental reasons. One recent study of 122 twin pairs reared apart showed that the heritability of performance on the ‘Draw-a-Child’ task was at least .38.³⁰ Also, if genetic variation in art-making ability reflects low mutation load (lower number of harmful mutations that disrupt artistic talent), and these mutations are mostly minor in severity and recent in evolutionary origin, then it should be difficult to find any specific ‘artistic skill alleles’ that replicate across families. Further, art making should be reduced by genetic inbreeding (e.g. if the artist’s parents were first cousins, leading to increased expression of harmful homozygous mutations) and by an individual’s dad being older at conception (since sperm mutation load increases with paternal age).

Genetic correlations with other desirable traits

If art-making abilities function as indicators of good genes, they should show genetic overlap (‘genetic correlations’) with other good traits such as physical health, attractiveness, longevity, fertility, general intelligence and conscientiousness. One recent study³¹ of 7752 twin pairs found that children’s accuracy and detail in drawing human figures at age four predicted their IQ scores at age fourteen, and the genetic correlation between artistic ability and general intelligence was .52. (Loosely interpreted, this finding suggests that about half of the genetic mutations that make people less intelligent also make them worse at art making—and vice versa.) One interesting twist on the genetic correlation argument is that artistic creativity seems genetically linked with some mental illnesses, which might explain their persistence in human populations.³² In a study of more than 300,000 people with major mental disorders,³³ the 54,042 people with schizophrenia were 30 per cent more likely than normal people to be visual artists, and their siblings and offspring were 36 per cent and 38 per cent more likely, respectively, to be visual artists. The 26,644 people with bipolar disorder were 42 per cent more likely to be visual artists, with similar increases among their siblings and offspring. My lab found, though, that it’s really general intelligence plus the personality trait of ‘openness to experience’—and not schizotypy per se—that drives creative drawing ability.³⁴



LEFT TO RIGHT

Snow Drawings at Catamount Lake, Colorado
2013
Sonja Hinrichsen

Conspicuous effort: the work is made by walking around in snowshoes for hours in precise patterns.

Untitled VI
from the series ‘Bunny’
2004–5
Polly Borland

Heritable individual differences. Genes influence the dramatic individual differences that we see in all physical traits—height, body shape, face structure. Here, genetic variation between female bodies embodies different male ancestors’ aesthetic ideals that shaped their mate choices; extrapolated into the future, these diverging sexual selection trajectories would result in different subspecies and then species. But genes also influence all psychological traits ever studied, according to twin and adoption studies. Differences in art-making ability are likely to be moderately heritable, so by selecting mates who were good artists, our ancestors could increase the chances that their kids would be good artists in turn.

Draw-a-Child test
London’s Twins Early Development Study, King’s College London
Scores left to right—top row: 6, 10, 6; bottom row: 6, 10, 7

30 Jaime A. Velazquez, Nancy L. Segal & Briana N. Horwitz, ‘Genetic and environmental influences on applied creativity: A reared-apart twin study’, *Personality and Individual Differences*, vol. 75, 2015, pp. 141–46.

31 Rosalind Arden, Maciej Trzaskowski, Victoria Garfield et al., ‘Genes influence young children’s human figure drawings and their association with intelligence a decade later’, *Psychological Science*, vol. 25, 2014, pp. 1843–50.

32 Andrew Shaner, Geoffrey F. Miller & Jim Mintz, ‘Schizophrenia as one extreme of a sexually selected fitness indicator’, *Schizophrenia Research*, vol. 70, 2004, pp. 101–09.

33 Simon Kyaga, Paul Lichtenstein, Marcus Boman et al., ‘Creativity and mental disorder: Family study of 300,000 people with severe mental disorder’, *British Journal of Psychiatry*, vol. 199, 2011, pp. 373–79.

34 Geoffrey F. Miller & Ilanit R. Tal, ‘Schizotypy versus intelligence and openness as predictors of creativity’, *Schizophrenia Research*, vol. 93, 2007, pp. 317–24.



Conspicuous courtship display that tracks mating effort

During courtship, people should conspicuously (if unconsciously) display their art-making abilities and achievements to the opposite sex. For example, when young adults imagine a potential mating situation,³⁵ men score higher on creativity tasks after imagining any potential mate, short-term or long-term. By contrast, women's creativity increases only when they imagine a relationship with a committed, high-quality, long-term mate. People should also make, display and talk about art more when they're at peak mating age (adolescence and young adulthood) rather than older; when they're single rather than married; and when they're polyamorous rather than monogamous. (Of course, children should be intensely interested in learning and practising any skill that will become important in sexual selection after puberty, whether telling stories, making jokes, playing sports, singing songs or drawing pictures.) Art making should also be more common when people are in a mating market with a larger number of potential mates, an adverse sex ratio (more within-sex competition), and sexual norms that are more open to short-term mating. At peak fertility, just before ovulation, women's art-making skills should be higher (as most other forms of female physical and behavioural attractiveness peak then)³⁶ and hormonal contraception such as the pill should reduce art-making skills at mid-cycle (as it reduces all other forms of peak-fertility attractiveness). Men interacting with ovulating women should show higher mating effort, including more art-making and art-display motivation.

Production costs that guarantee signal reliability

Sexually attractive, impressive art should be hard to make, and require substantial investment of learning, practice, time, energy, materials, risk and other resources. Individuals in good condition (good physical health, good mental health, good nutrition, low parasite load) should be able to bear these costs more easily, and this 'condition-dependence' of art-making ability should be salient to observers. For example, conspicuous failures of symmetry, precision or representational accuracy should provoke spontaneous attributions that the artist must have messed up due to bad genes and/or bad condition.

Löwenmensch (Lion Man)
Hohlenstein Stadel cave, Asselfingen, Alb-Donau,
Baden-Württemberg, Germany, Upper Paleolithic,
c. 40,000–35,000 BP

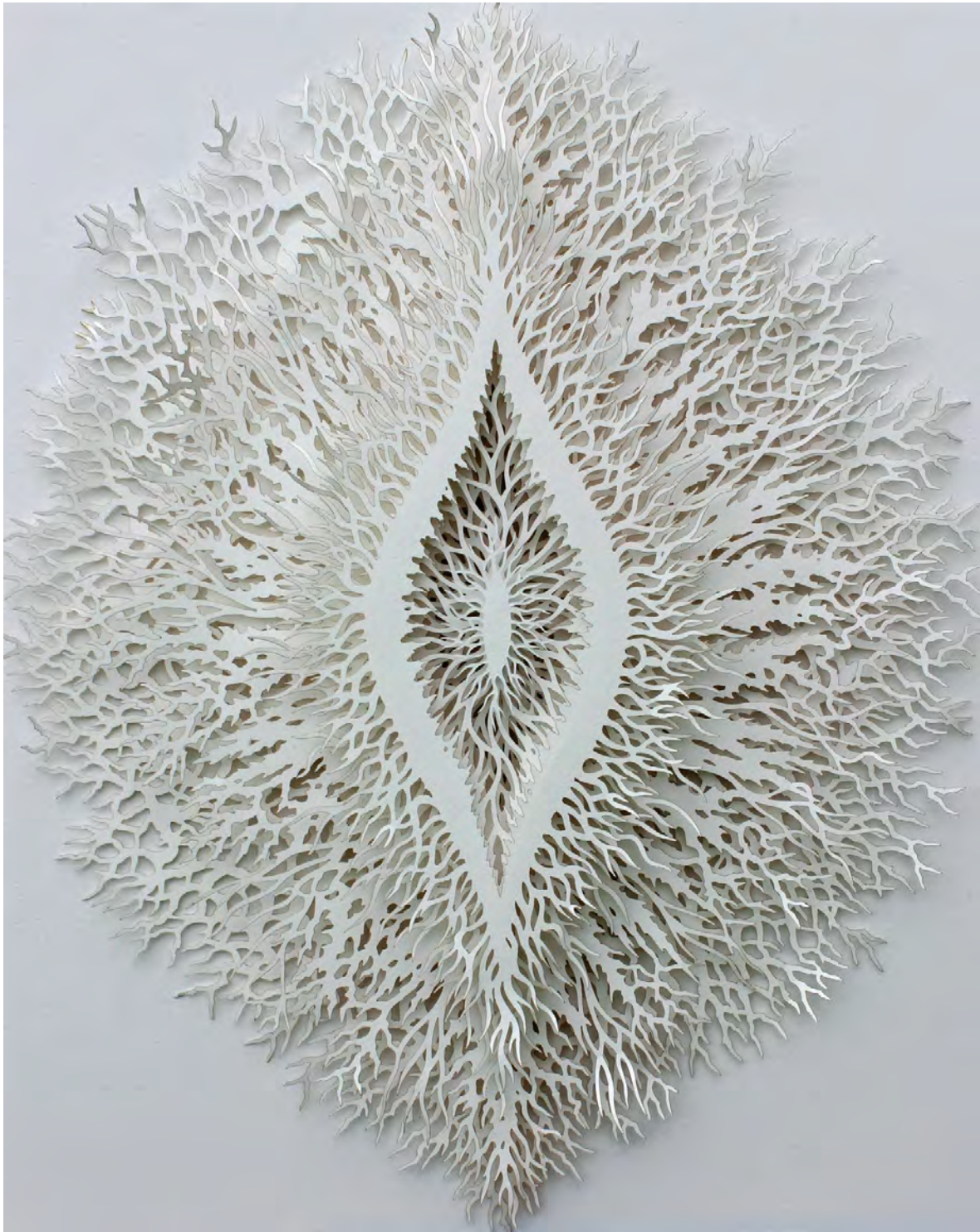
Conspicuous precision in one of the oldest works of figurative art. About 30 centimetres high, it was carved from woolly mammoth ivory using a flint knife, which must have taken many hours. The head is a fine representation of a European cave lion (*Panthera leo spelaea*), now extinct.

Great gold belt buckle
from the Sutton Hoo ship burial, mound 1
Suffolk, England, Anglo-Saxon, early 7th century

Conspicuous precision in body ornamentation, showing complex knotwork.

35 Vidas Griskevicius, Robert B. Cialdini & Douglas T. Kenrick, 'Peacocks, Picasso, and parental investment: The effects of romantic motives on creativity', *Journal of Personality and Social Psychology*, vol. 91, 2006, pp. 63–76.

36 Geoffrey F. Miller, Joshua M. Tybur & Brent D. Jordan, 'Ovulatory cycle effects on tip earnings by lap-dancers: Economic evidence for human estrus?', *Evolution and Human Behavior*, vol. 28, 2007, pp. 375–81.





Seed
2013
Rogan Brown

Conspicuous precision in decorative art. The artist cuts many layers of paper by hand with a scalpel knife. The combination of symmetry and intricacy means that some works take months to complete.

Finis Coronat Opus
1995
Charles Bell

The game of life rendered with conspicuous precision. The title means 'The end crowns the work', or 'The ends justify the means'. This hyperrealistic painting shows a close-up of a pinball machine with a barbarian princess and a halberd-wielding demon, with a ball in play and bonus points accumulating.



Higher trait variance in males

In almost all animal species, the maximum reproductive rate for males is higher than for females—e.g. Gustav Klimt could have potentially sired a new baby every day with a different lover (and he sired at least fourteen children with his admirers), whereas a woman who breastfeeds can produce a new baby no more than every couple of years. This higher male reproductive potential favours stronger risk-seeking among males, not just at the behavioural level of violence and extreme sports, but at the level of brain growth and development. The result is higher trait variance in males—e.g. for intelligence, there are more males at the extremes of the bell curve.³⁷ The same should hold true for art-making ability: we should expect more male artistic geniuses, but also more male artistic idiots who can barely draw, sculpt or ornament themselves tastefully. The same male risk-taking logic should apply to psychoactive substance use in the service of artistic creativity: men should seek out and use more drugs to provoke aesthetic inspiration and art-making motivation and diligence.³⁸ Further, art making seems associated with having a more masculinised body and brain: a study of fifty artists compared to non-artists found lower 2D:4D digit ratios (ratio of second finger length to fourth finger length) in both males and females. Low 2D:4D is a standard marker of prenatal testosterone exposure³⁹ that also predicts brain masculinisation and increased mating effort.

Sexual similarities in art-making capabilities

Darwin's hypothesis about art evolution was based on his classic 'males compete, females choose' (MCFC) model of sexual selection. That model works well for most species, in which males are not very choosy and don't invest much in relationships or offspring. However, in species like ours, with pair-bonding, social monogamy, committed relationships and investing fathers, the 'mutual mate choice' (MMC) is more accurate than the MCFC model in making predictions about basic capacities for courtship behaviours.⁴⁰ So we expect sexual similarity in abilities to make art, even when there are sex differences in motivations to make art—just like the sexes are almost exactly equal in average IQ, although men are bigger intellectual show-offs in every domain of intelligence.

Sex differences in display strategies

Higher male potential reproductive rate and risk-seeking should translate into males doing more public broadcasting of their art-making skills, through creating more of the 'public' art that ends up in museums and art history records. Indeed, until the mid twentieth century, men produced about ten times more public art than women.⁴¹ By contrast, women should more often narrow-cast their art-making skills towards favoured males, to minimise sexual harassment and coercion attempts by undesired males, and to reduce the risk of adverse social judgement by peers. The result is the historical dimorphism between male 'high art' and female 'domestic arts and crafts'. With contraception, increased sexual safety for female public artists and reduced stigmatisation of courtship effort by women, the last several decades have seen an extraordinary increase in women's public art making. This emerging golden age of female artistic creativity may be due as much to 'biological' effects such as these shifts in the social ecology of human mating, as to 'cultural' effects such as feminism, economic empowerment, and the rise of art schools and MFAs.

Portrait of Emilie Louise Flöge
1902
Gustav Klimt

Flöge (1874–1952) became Klimt's lover when she was eighteen and he was thirty; she is twenty-eight here. They became lifelong companions, and she became a successful fashion designer in the rational dress movement. Klimt's most famous work, *The Kiss*, appears to represent them as lovers. A progressive feminist, she seems to have accepted their open relationship and his many lovers.

Cartoon of Klimt
1903
Remigius Geyling

Klimt's models/groupies offer admiration, wine, food and sex as he works on one of his most inspiring murals for Vienna University.

37 Wendy Johnson, Andrew Carothers & Ian J. Deary, 'Sex differences in variability in general intelligence: A new look at the old question', *Perspectives on Psychological Science*, vol. 3, 2008, pp. 518–31.

38 Geoffrey F. Miller, 'Optimal drug use and rational drug policy', *Behavioral and Brain Sciences*, vol. 34, 2011, pp. 318–19.

39 Danae Crocchiola, 'Art as an indicator of male fitness: Does prenatal testosterone influence artistic ability?', *Evolutionary Psychology*, vol. 12, 2014, pp. 521–33.

40 Geoffrey F. Miller, 'Mutual mate choice models as the Red Pill in evolutionary psychology: Long delayed, much needed, ideologically challenging, and hard to swallow', *Psychological Inquiry*, vol. 24, 2013, pp. 207–10.

41 Geoffrey F. Miller, 'Sexual selection for cultural displays', in R. Dunbar et al. (eds), *The Evolution of Culture*, Edinburgh University Press, Edinburgh, 1999, pp. 71–91.





Self-portrait as a Lute Player
1615–17
Artemisia Gentileschi

Painted around age twenty-three (at peak fertility), Gentileschi signals intelligence, fashion taste, musical talent and artistic talent. Sexual selection through mutual mate choice predicts sexual equality in art-making abilities, although males are expected to do riskier, higher cost, more public broadcasting of their artistic talents.

Dame Laura Knight with model, Ella Louise Naper ('Self Portrait')
1913
Laura Knight

Knight was the first woman elected to the Royal Academy of Arts, in 1936. She plays around with red ochre tones and depicts the female aesthetic form at three levels: herself in silhouette as the artist, the model from behind as the male gaze would objectify her, and her rough painting-in-progress of the model.



CONCLUSION

Darwin thought that sexual selection offered a pretty good way of explaining the origins and development of our art-making instincts. I agree—especially when we combine sexual-selection theory with modern signalling theory, extended-phenotype theory, and mutual-mate-choice theory. The resulting ‘mate choice for art-making’ theory highlights the functional similarities between human art and aesthetic ornamentation in many other species such as balloon flies, cichlid fish and bowerbirds. It’s also consistent with nine emerging lines of evidence from the last twenty-five years of evolutionary psychology and Darwinian aesthetics:

- ① People prefer mates who show artistic virtuosity and creativity.
- ② Skilful art making attracts more mates, especially for male artists.
- ③ Art-making abilities are moderately heritable.
- ④ Art-making abilities are genetically correlated with other desirable traits.
- ⑤ Art-making motivation tracks mating effort across ages and relationship status.
- ⑥ High-quality art requires high costs in resources, energy, time and skill, so reveals good genes, good condition, and good partner and good parent potential.
- ⑦ Males show higher variance in the trait (more male artistic geniuses, but also more male artistic idiots, with no skills or taste), reflecting sex differences in reproductive risk-seeking.
- ⑧ Males and females show equal art-making abilities, due to mutual mate choice.
- ⑨ Males on average invest more in broadcasting their art-making abilities to multiple potential mates (through larger-scale public art and architecture), while females tend to narrow-cast to potential high-quality mates (through smaller-scale art, craft and design).

Of course sexual selection doesn’t explain everything about contemporary art, for two main reasons.

First, any biological capacity such as art making that evolved to serve any ‘proper’ function (the reason why it evolved in the first place) can be exapted, modified and repurposed to serve many other ‘derived’ functions, such as signalling tribal affiliation, glorifying religion, designing propaganda for military-industrial states, fetishising luxury brands, optimising websites, marking gang territories with graffiti or shocking *Artforum* critics at Art Basel. For any theory about art’s origins, the number of derived functions will vastly outnumber the number of proper functions, because people are creative at adapting our evolved mental traits to new purposes and circumstances.

Untitled, New York (N.410)
Untitled, New York (N.406)
 1979–80
 Francesca Woodman

In these self-portraits, a now-famous young photographer illustrates two ways to attract a mate: standard primate self-ornamentation to improve physical appearance (the ‘pink ribbon stratagem’), or a more self-consciously technical form of self-presentation that says more about the artist’s mind than her body (the ‘artfully composed self-portrait stratagem’—also employed by Cindy Sherman). Woodman is dressed identically in both photos, in the same setting. Yet their contrast symbolises the flood of female talent into the contemporary art world in the last forty years, as more women cultivated their mental-fitness indicators in addition to their physical-fitness indicators—restoring the Pleistocene norm of both sexes striving to make good art.



Second, ever since early-twentieth-century modernism, the western art world has rejected any emphasis on representational skill, pleasant content or seductive functions as reactionary, bourgeois or sexist. Most art schools teach MFA students how to talk pretentiously about their 'process' and their 'practice', rather than actually teaching technical processes or requiring any practice. The gallery system creates commercial incentives for every aspiring professional artist to create a unique stylistic brand, rather than building upon a virtuosic tradition. Art critics expound their conceptual responses to works and the artist's alleged intentions and influences, rather than doing investigative journalism about the materials and skills that an artist actually used to produce their works, or their social/sexual/status reasons for doing so. However, that stale old Euro-American modernist art system faces an existential threat from Asia. Asian art schools have trained a vast new generation of young artists who are equally comfortable with technical virtuosity and conceptual innovation. Art investors are starting to notice that they can buy works that satisfy both their ancient aesthetic instincts for costly trait-signalling and their postmodernist tastes for stylistic creativity. Skill is making a comeback. The old biophobic cults of futurism, abstraction, international modernism and conceptualism are giving way to new biophilic, content-rich movements on the border between art and craft, such as street art, pop surrealism and manga. This, I think, represents a return to Pleistocene art-making instincts and values. Against the dead hand of modernist art criticism, mass affluence empowers the emerging global middle class to assert their desire to see art that combines virtuosity, creativity and good old-fashioned sexual charisma.

City Glow
2005
Chiho Aoshima

One of Japan's leading contemporary female artists. Technical skill combined with conceptual innovation and biophilia, opening a path for future art that satisfies our prehistoric aesthetic instincts more than modernism ever did. IMHO.