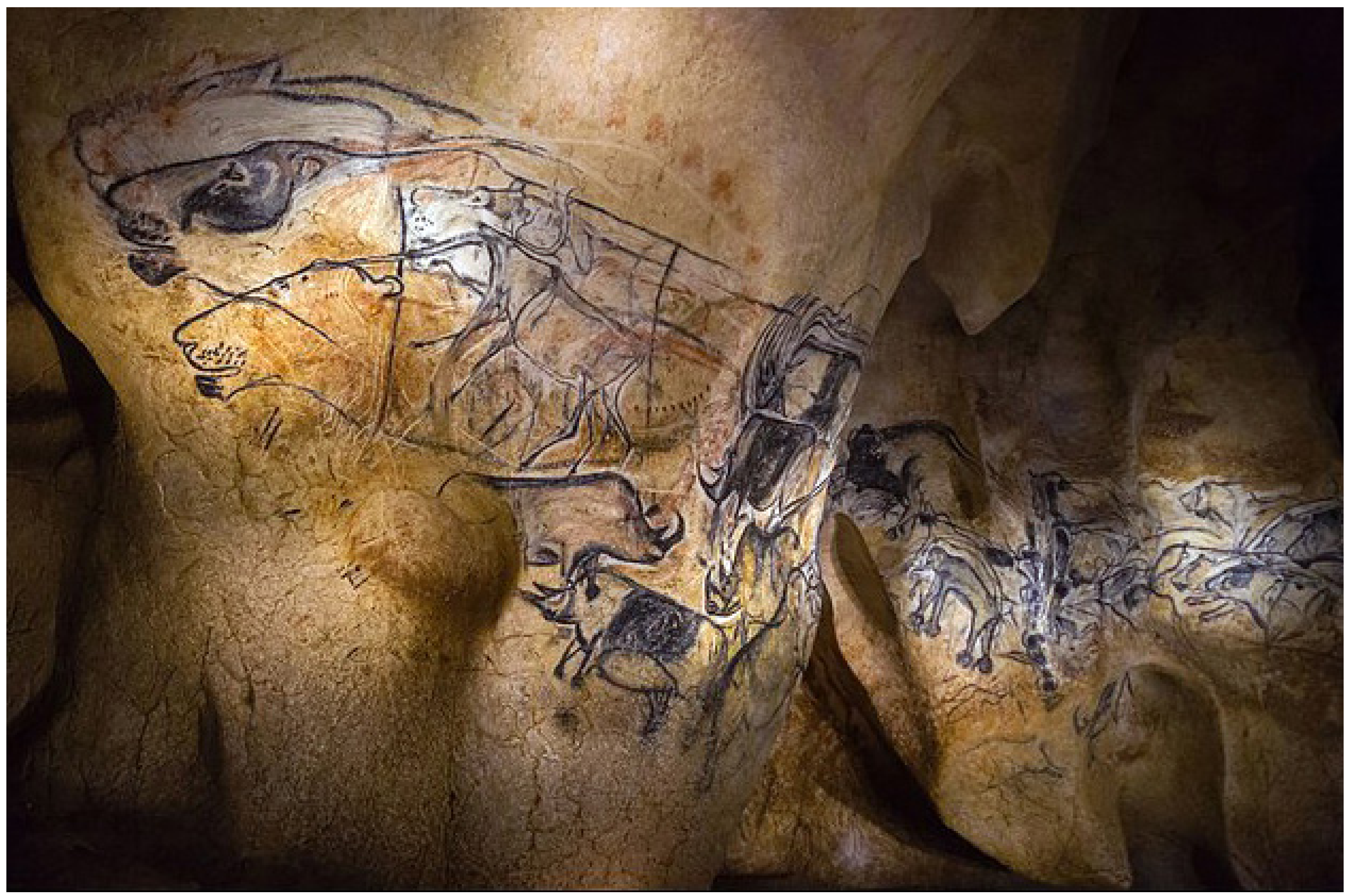
STEVEN PINKER

ART BECAUSE WE CAN



Wall paintings in the Chauvet-Pont-d'Arc Cave
France, Upper Paleolithic,
approximately 32,000–30,000 BP

The limestone cave of Chauvet, in the Ardèche River valley in southern France, is lined with the earliest known figurative paintings in Europe. There are hundreds of animals, of at least thirteen different species, including horses, cattle, mammoths, bears, panthers, hyenas, cave lions and rhinoceros.

Art is a biological puzzle, because it drains time and resources that might otherwise be used to promote an individual's fitness. Unfortunately, the evolution of aesthetics in art is not an advanced area of psychological science: at present there are more ideas about the possible adaptive origins of art than there are data verifying them. Complicating the topic is the fact that there are people who are hostile to the idea that any human behaviour could ever be shown to be an evolved adaptation, and people who write as if all behaviour must be adaptive but do not apply scientific rigour to their argument.

Why does art appear to be a human universal? Could it be a biological adaptation whose function we have failed to notice? I argue otherwise: that art is a by-product of other adaptations rather than being an adaptation itself.

If not 100 per cent universal, then art certainly is extraordinarily widespread, and has characteristic features across diverse cultures. The late Denis Dutton, author of *The Art Instinct*, usefully listed a number of criteria by which art can be identified:

> Art is not practical, like a tool or a house.
>
> It requires the exercise of specialised skill.
>
> It is considered to be a source of pleasure.
>
> Art is made in recognisable styles.
>
> There are rules that form the composition of artworks.
>
> Art is judged and appreciated.
>
> At least in part, it represents or imitates some experience of the world.
>
> The pleasure that it causes is intended by the artist, rather than being an accident.
>
> People designate the experience of appreciating art as special.
>
> It involves some kind of imaginative experience: people are prompted by art to visualise or imagine some aspect of the world.[1]

1 Denis Dutton, *The Art Instinct: Beauty, Pleasure, & Human Evolution*, Bloomsbury Press, New York, NY, 2009.

Stag Hunt, China, Northern Song (960–1127)
or Jin (1115–1234) dynasty
Attributed to Huang Zongdao

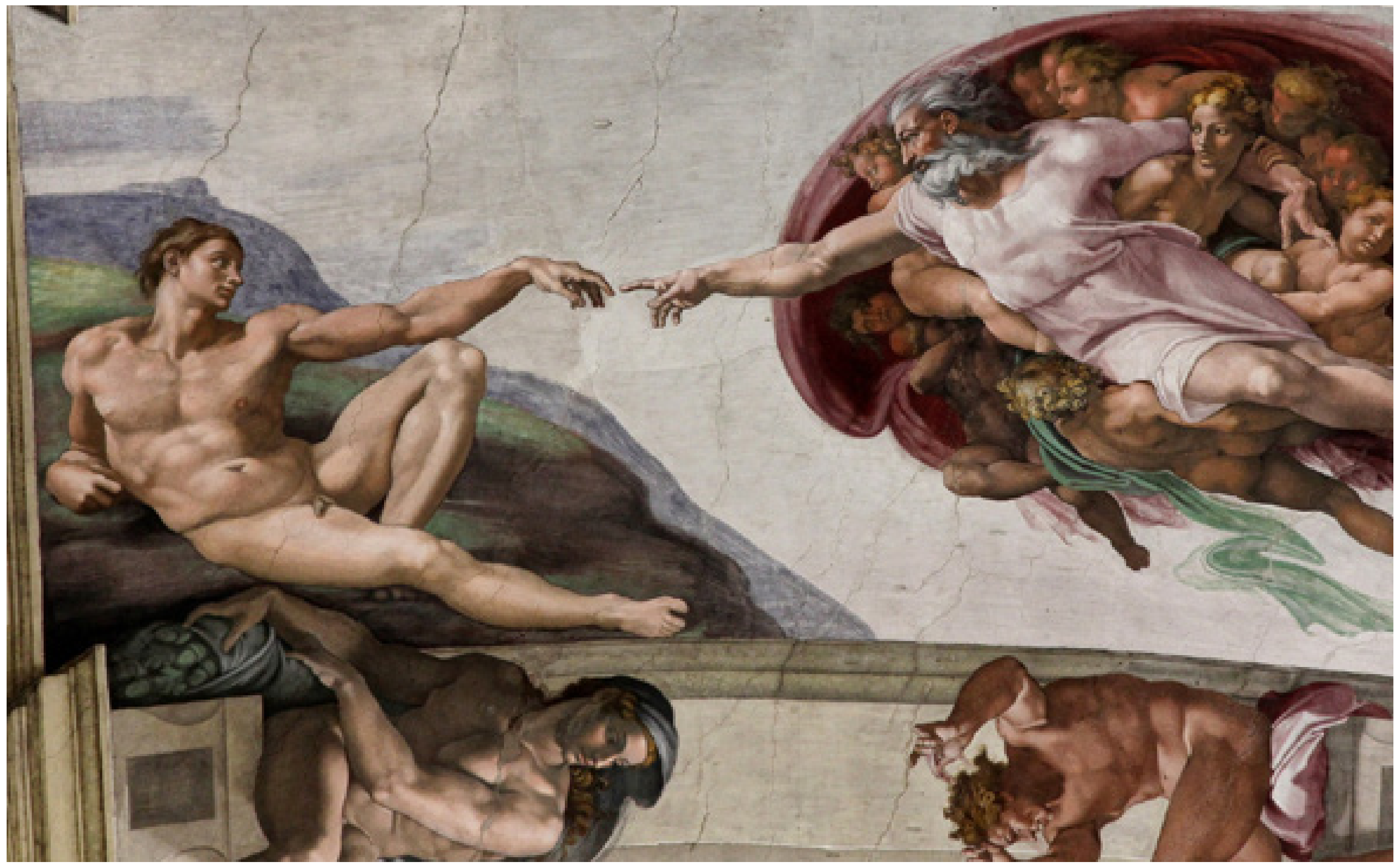
A Break Away!
1891
Tom Roberts

Trevi Fountain
Rome
1732–62

Funerary army of Qin Shi Huang,
first Emperor of China
China, Xi'an, Shaanxi Province
210–209 BCE

Marilyn (Vanitas)
1977
Audrey Flack

Wanjina figures
Drysdale River, Central Kimberley,
Australia, Ngarinyin people



The Creation of Adam
Rome, Sistine Chapel
c. 1511–12
Michelangelo Buonarroti

The first criterion—that, almost by definition, art is not practical—raises the question of why it exists, given that anything that does not immediately enhance fitness should be selected against since it involves the diversion of time and energy that could be spent on surviving and reproducing. Hence the question of whether art could possibly be a biological adaptation.

It is important to think clearly about the question before attempting an answer. First and foremost, 'Is art a biological adaption?' must be distinguished from such questions as 'Is art valuable? Desirable? Healthy? Worthwhile? Deserving of support?' and so on.

In many people's minds, the question of whether art is a biological adaptation gets blurred with questions about its worth. But in fact the question 'Is art a biological adaptation?' is not a referendum on whether art is to be valued, treasured or valourised. It is a question about 'adaptation' in the biologist's strict sense: 'Is art a heritable trait that enhanced the reproductive rate of our ancestors?'

I believe that it is a confusion between these two questions that makes most hypotheses about art's adaptive function seem so lame and flabby—for example, the theory that the biological function of art is to bring us together as a community, to see the world in new ways, or to feel at one with the cosmos. Such observations are certainly not false. It's just that they should not be confused with a hypothesis about the adaptive value of art in the biologist's sense.

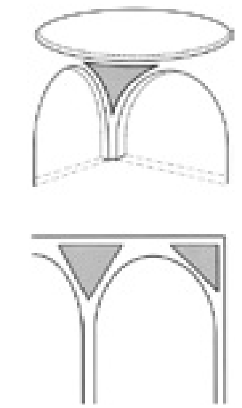
The difference between the biology question and the worth question can be dramatised by asking the same questions about our ability to read, where the facts are much clearer. Reading is undoubtedly desirable, valuable, and something we ought to promote and enhance—but it is just as undoubtedly not a biological adaptation. Written language only emerged about 5000 years ago, well after our species reached its current biological state. Unlike speech, it does not develop spontaneously in every child but must be acquired by learning, usually at school. Thus reading is not a biological adaptation, even if it makes possible much of what we value in life.

Now, compare reading with, say, the human capacity for genocide: wiping out every last member of an enemy. Needless to say, genocide is not a desirable human trait. Yet there are plausible arguments for its origin as a biological adaptation, namely the elimination of a threat and the usurping of contested resources.

So what exactly is a biological adaptation? It is a product of natural selection—the differential survival of replicators—which was discovered in the nineteenth century by Charles Darwin and Alfred Russel Wallace. In biology, the minimal criteria for identifying an adaptation are that it is species-universal, it reliably develops in individuals, and its causal effects would, in an ancestral environment (the one in which the adaptations were shaped) have improved its bearer's prospects of survival and reproduction.

Hadza people on an overlook pointing to Lake Eyasi, Tanzania

The Hadza, or Hadzabe, are an indigenous ethnic group in the central Rift Valley and neighbouring Serengeti Plateau in north-central Tanzania. The Hadza number fewer than 1000, of whom some hundreds still live as hunter-gatherers.

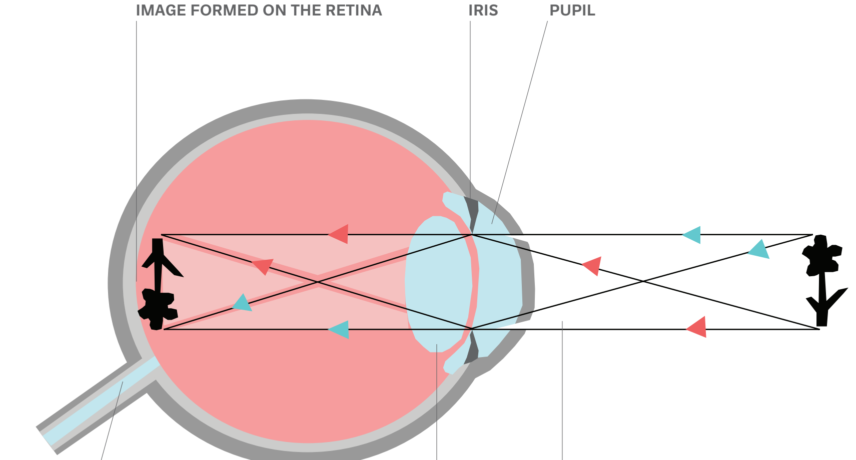


A three-dimensional spandrel is formed in architecture as a necessarily triangular space where a dome meets arches at right angles.

By-products, in contrast, are traits that have piggybacked on adapted traits. They are also sometimes called exaptations or spandrels (a term introduced by Richard Lewontin and Steven Jay Gould, referring to the spaces that are necessarily created between architectural structures: when a dome is supported on four arches, for example, there are tapering spaces between the arches as a consequence of the laws of geometry).[2] In evolution, if certain traits are selected for, others will come along for the ride. An example is the redness of blood, which is a consequence of the laws of physics, unlike forms of pigmentation that evolved as camouflage or sexual ornamentation. Given the physical properties of oxygenated haemoglobin, and given that the uncontroversial function of haemoglobin is to carry oxygen to tissues, the fact that blood is red needs no further explanation.

A third source for biological traits (in addition to adaptations and by-products) is random genetic drift, in which certain traits get fixed in species by the luck of the draw (say, if all the bearers of one version of a gene happened to get struck by lightning).

Here is how to distinguish a by-product or random effect from an adaptation. First you have to specify the 'goal' of the putative adaptation. Of course evolution does not literally have goals, but it simulates goal-directed processes in the sense that it produces traits that appear to have been engineered for a specific purpose; for example, the 'goal' of the heart is to pump blood; or of the eye, to form and transduce an image.



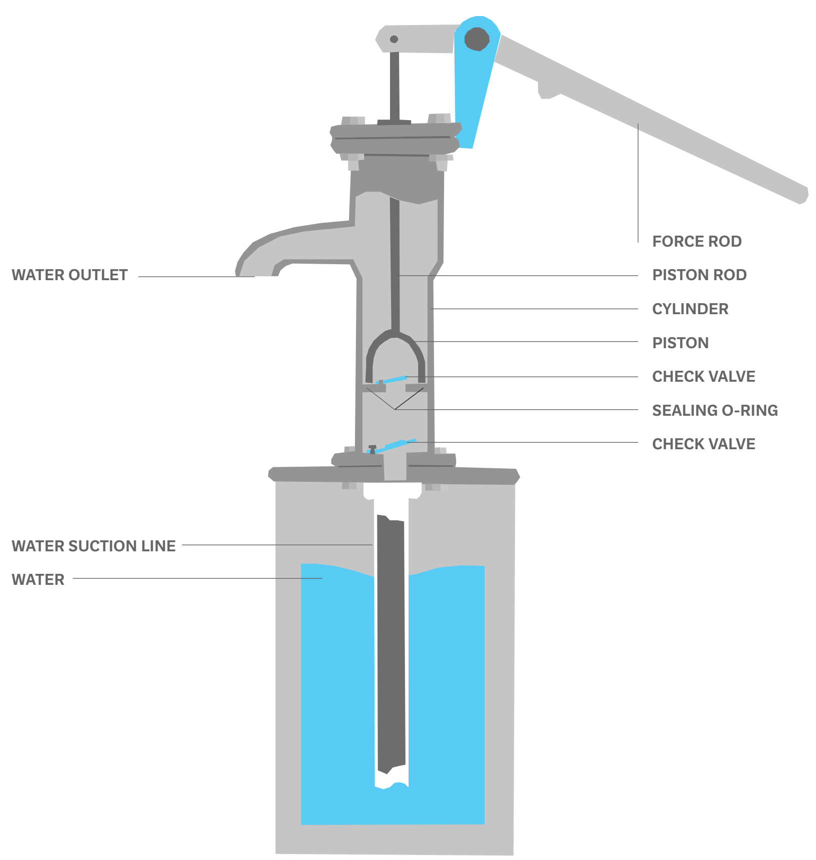
The 'engineering' of the human eye

Secondly, you have to characterise the environment of evolutionary adaptedness, or EEA: the world of cause and effect in which the trait was selected, which may or may not be the same as the world we live in today.

2 Stephen Jay Gould and Richard Lewontin, 'The spandrels of San Marco and the Panglossian Paradigm: A critique of the adaptationist programme', *Proceedings of the Royal Society of London*, *Series B*, vol. 205, no. 1161, 21 September 1979, pp. 581–98.

Since the agricultural revolution, and accelerating with the industrial and information revolutions, we have so altered our world that survival circumstances now are very different from those prevailing through 99 per cent of human evolution.

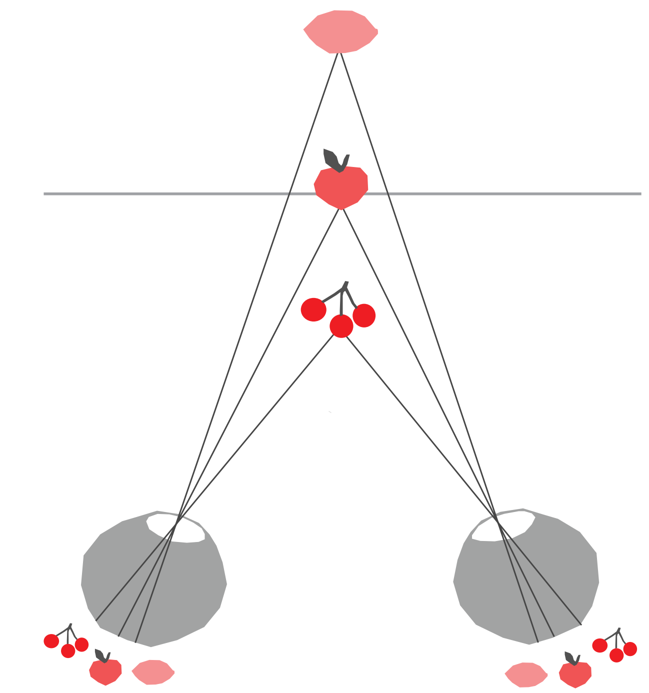
Third—and this is critical—you have to lay out the engineering specs for a device that would obtain that goal in that environment. As you would for a device to pump water.



Engineering specifications for a water pump

Notice that my points One, Two and Three are completely independent of the organism you are interested in, in our case, *Homo sapiens*. It is, deliberately, armchair theorising, not the result of actually looking at our species. Once you have done that—once you have *a priori* predictions about design, ones that are not circularly derived from what we know about the organism, then, you look at the organism itself, to see how well its traits match the engineering specs.

As an example, consider depth perception. First you can use pencil-and-paper geometry to show that comparing images between two eyes could meet the need to assess how far away something is.



Three-dimensional depth perception

That is *a priori* and could be done regardless of whether any real-life organisms actually use stereoscopic information. Indeed you could use those design specs for stereoscopic depth perception to build a robot that can see in depth. But now, empirically, you can look at your human beings (or other organism) and see if they really do use the disparity between the images in two retinas to calculate depth. If so, then you have increased confidence that depth perception is a bona fide biological adaptation. (You can be even more confident if very different species of organism end up with similar design features, suggesting that they have evolved a common solution to an engineering problem.)

WALL·E

from the computer-animated film produced by Pixar Animation Studios and released by Walt Disney Pictures
2008

A two-camera robot, designed to engineering specs for stereoscopic vision.

Chocolate cake

Satin bowerbird
(*Ptilonorhynchus violaceus*)
male decorating bower

Another example is fear of snakes, which appears to be a human universal.

Is it an adaptation? A herpetologist will tell you that many snakes are venomous—a fact that is independent of the emotional makeup of a human being. The congruence between the herpetologist's account of the venomous properties of snakes and a psychologist's account of the emotional properties of people increases the scientists' confidence that fear of snakes is an adaptation: that certain emotional reactions have become facilitated in the brain because people with automatic and therefore speedy defence responses to danger left more offspring than people without.

And one more: a sweet tooth. The biochemical information that sugar is a concentrated source of energy and the observation that people in all cultures like to eat sweet things are of course independent. However taking the two together, the *a priori* with the empirical, is a solid first step towards a sound hypothesis that a taste for sweets is an evolutionary adaptation.

Compare these examples with some of the unscientific adaptationist arguments made about human behaviour—the *post-hoc* storytelling Just-So stories. Q: What is the adaptive function of humour? A: It relieves tension. Q: What's the adaptive function of music? A: It bonds the group.

The problem, from a rigorous scientific point of view, is that the putative benefit—e.g. bonding the group—is not something predictable by an independent engineering analysis. You could ask 'What does music do to you?' and subjects might answer 'It bonds our group'—which might be true; but to argue thence that music has an adaptive function in itself would be trying to explain one *post-hoc* fact with another.

A final requirement of a sound adaptationist hypothesis is that the outcome generated by the adaptation must benefit the entity that does the replicating. Benefits such as improving the happiness of the group, the harmony of the ecosystem, or elegance of the cosmos do not favour one breeding individual over another. For a replicating trait to be an adaptation, it ultimately has to increase the number of copies of that very replicator. This is the only known mechanism that can produce the appearance of engineering or design in the living world: design without a designer. Many current hypotheses about the origins of art fail to stand up to this requirement.

Even if a hypothesis does meet the criteria for being a legitimate adaptationist explanation, it still must stand up to empirical tests as an accurate description of human behaviour. One, that in my opinion, falls short on empirical grounds, is the popular hypothesis that art evolved through sexual selection as a signal of mate value, like a male bowerbird building and decorating a twiggy bower with coloured ornaments during the mating season to attract a mate.

Taj Mahal
Agra, India
1632–53

Taj Mahal means 'Crown of Palaces' in Persian. The ivory-white marble mausoleum was built by the Mughal emperor Shah Jahan to house the tomb of his favourite wife, Mumtaz Mahal. The vast complex was constructed over twenty-one years, employing some twenty thousand artisans.

Funerary mask of Tutankhamun
Egypt, c. 1323 BCE

This mask, perhaps one of the world's most famous works of art, represents the deceased as Osiris, god of the ancient Egyptian afterlife, and was placed on the young pharoah's mummified remains in the innermost of his three coffins. Tutankhamun reigned 1332–1323 BCE and died at the age of about eighteen. His tomb in the Valley of the Kings was reopened in 1923.

Saliera (salt cellar)
1543
Benvenuto Cellini

Made by the celebrated Florentine goldsmith, Benvenuto Cellini, for François Ier, king of France, this luxurious piece of gold, ivory and enamel tableware is an allegorical representation of Land and Sea. Cellini's original design was for Cardinal Ippolito d'Este. Later the saliera was given by the French king, Charles IX, to the Habsburg Archduke Ferdinand II of Tyrol.

According to this argument, art is a low-probability arrangement of matter, demanding of skill and cognitive resources. If you have what it takes to produce art you are flaunting your good genes. Unlike the Just-So stories, this is a sound and rigorous adaptationist hypothesis. It even seems to be supported by certain empirical observations, such as that artists are seen as sexy and are in fact sexually successful—Pablo Picasso and Mick Jagger are often cited as examples.

But the full empirical picture, I believe, is problematic for the sexual selection theory. The vast majority of artists—the senior citizens who sit on riverbanks painting Sunday sunsets, the high school music teacher who offers trombone lessons to nine-year-olds on the side—are neither motivated by attracting a mate nor perceived as particularly sexy. Nor can the experience of appreciating art be equated with being sexually attracted to the artist: I doubt the majority of visitors to Mona come to track down the contact details of artists in order to sleep with them (unlike the bowerbird scenario, where displays are produced exclusively in a mating context). A simpler hypothesis for the Picasso/Jagger phenomenon is that anything humans are good at—moving, speaking, making things—makes them more sexually attractive. This has nothing specifically to do with art, and everything to do with outsize accomplishment of any sort.

There is certainly a connection between art and the psychology of status. The art historian Quentin Bell, in his 1947 book *On Human Finery* (a meditation on the history, sociology and psychology of fashion), points out that elite art has always been tied up with sumptuousness and excellence: magnificent buildings, jewel-encrusted regal or sacerdotal costumes, the highly skilled crafting of rare and precious materials that only the wealthy and powerful could afford.[3]

Bell was inspired in turn by the American economist and sociologist Thorstein Veblen's theory of fashion, expounded in his iconic 1899 book *The Theory of the Leisure Class*, which suggests that the psychology of status may be explained by the principles of 'conspicuous consumption', 'conspicuous leisure' and 'conspicuous waste'—in other words, only the wealthiest among us can throw money away on non-utilitarian ornaments and entertainments.[4] More than a century later, the three-way connections among art, prestige and conspicuous expense have become increasingly apparent in the art world, where the spectacular costs of elite art have become a recurring point of discussion.

3 Quentin Bell, *On Human Finery*, Hogarth Press, London, 1947, p. 34; the son of Clive Bell and Vanessa Bell and the nephew of Virginia Woolf, Quentin Bell (1910–96) sometimes worked as an artist, principally in ceramics, but became an influential art history professor, chronicler of the Bloomsbury Group and his aunt's official biographer.

4 Thorstein Veblen, *The Theory of the Leisure Class: An Economic Study of Institutions*, MacMillan, New York, NY, 1899.

Hanging Heart
1994–2006
Jeff Koons

The artist poses beside his *Hanging Heart (Red/Gold)*, at the opening of Dasha Zhukova's 'Garage' art space in Moscow, 2009.

A good twenty-first century example is the story of Dasha Zhukova, wife of Russian oligarch Roman Abramovich (owner of the Chelsea Football Club) exhibiting in her private Moscow contemporary art gallery a *Hanging Heart* by American artist-star Jeff Koons (sold at Sotheby's in 2007 for $US 23.6 million, then owned by French retail magnate François Pinault).

An interesting corollary of Veblen's analysis is that the currency of conspicuous consumption and its kin changes dramatically in a world of mass production, where it is all too easy to fake the trappings of wealth, rendering them useless as a criterion by which elites may distinguish themselves from the bourgeoisie. Veblen was the first to point out that the trappings of the leisure pursuits of society's topmost echelon became status symbols of the middle class, forcing the upper classes to constantly seek new and still less accessible signals to differentiate themselves.

Bell picked up where Veblen left off, identifying a phenomenon he called 'conspicuous outrage': the deliberate flouting of conventional standards of taste as a way of telling the world that one is so well-connected or secure in one's status that one no longer has to care what anyone else thinks. As Bell summarised:

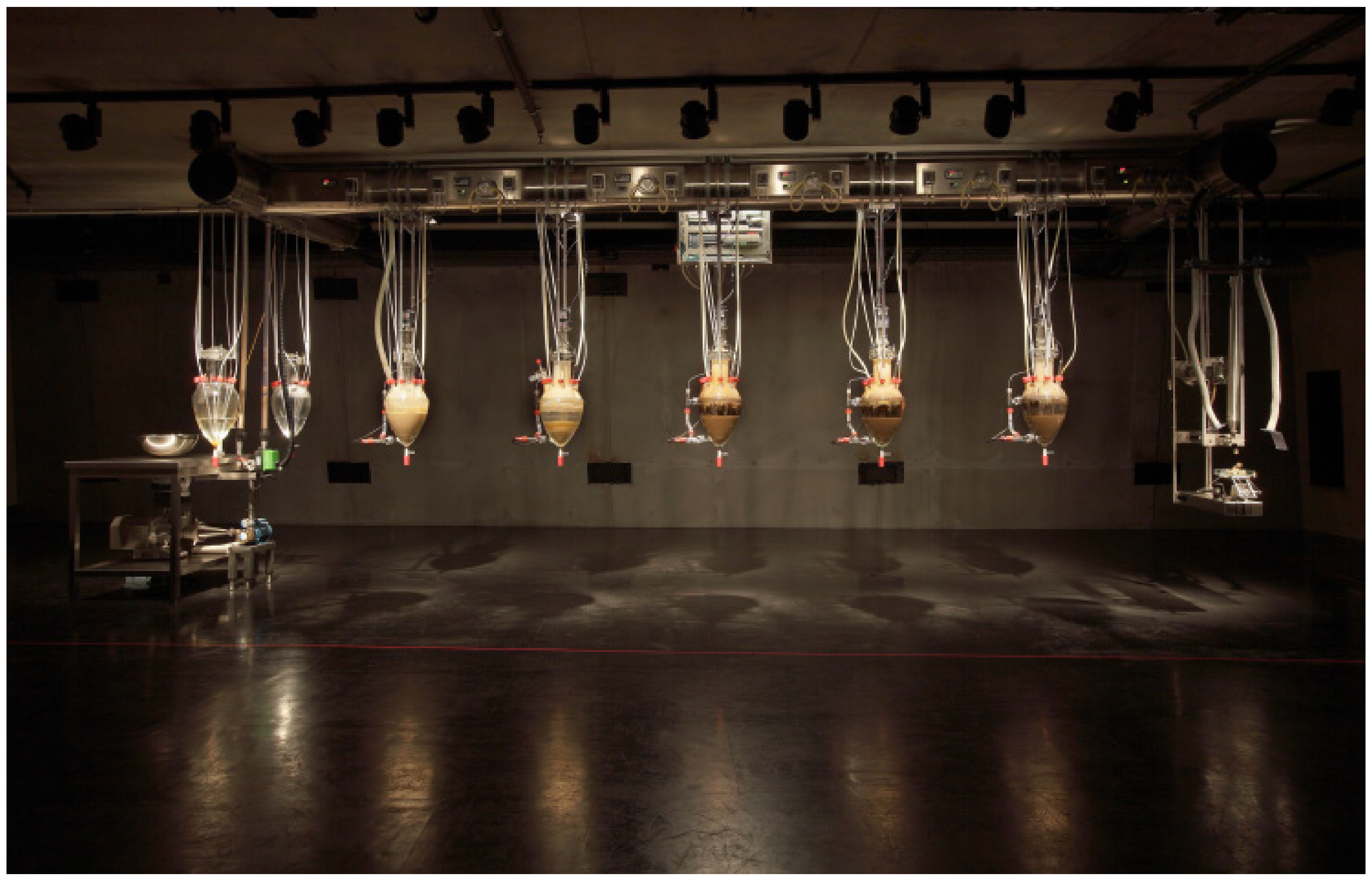
> Fashionable exposure begins by shocking the vulgar, but it ends by establishing itself as a custom and thus ceasing to shock; its failure is implicit in its success. But so long as there is a development of the mode the quality of outrage is maintained.

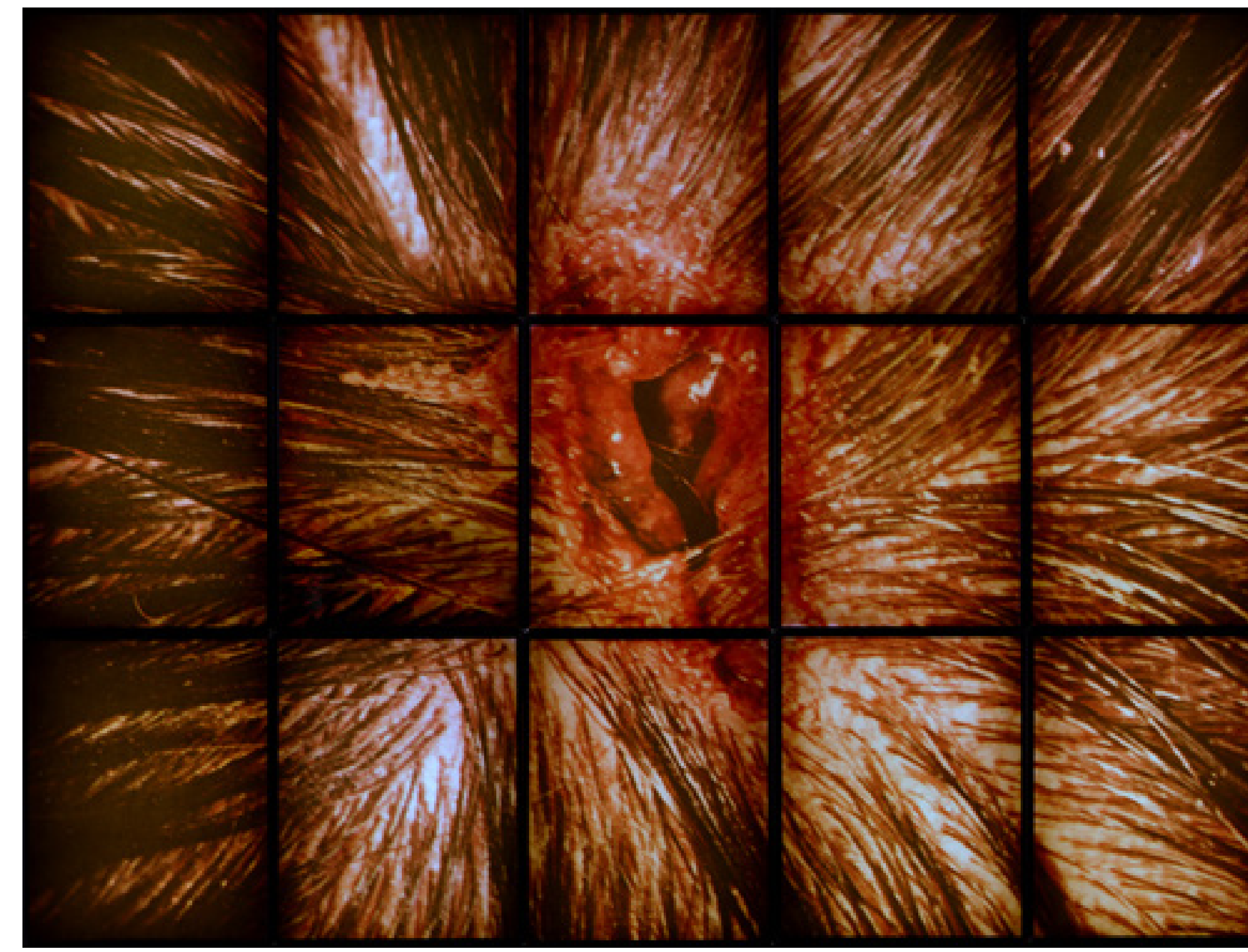
This may explain some contemporary popular culture, where traditional standards of attractiveness are conspicuously flouted by transiently fashionable rebels and hipsters (Boy George, Ozzy Osbourne, Marilyn Manson and so on). It may also explain some conceptual art (and art writing) where conspicuous obfuscation is part of the mode by which the elite status of artists and collectors alike is maintained.[5] As with conspicuous consumption, those who are not at the top of the status hierarchy soon start trying to imitate those higher up. So you get the psychology of hip and cool and a constant striving for novelty—in a world where visual imagery is disseminated more rapidly and widely and is often more easily copied than ever before. This hypothesis sees some forms of art as by-products of the psychology of status, rather than being adaptations in their own right.

So the psychology of *fashion* must be distinguished from the psychology of *beauty* or aesthetics. And both must be distinguished (at least conceptually) from the psychology of *art*. Aesthetics is the phenomenon in which human beings take pleasure from some kinds of perceptual experience.

Aesthetics may be studied scientifically: one can ask what *Homo sapiens* finds beautiful, and ask whether these aesthetic responses are adaptations. One can then ask, as an independent question, about the ways in which *artists* use aesthetics in their work—or systematically choose not to—in order to achieve their aims. Anyone visiting Mona, indeed anyone thinking about the range of human art-making over the last fifteen or so millennia, knows that not all art is created simply to evoke a pleasurable aesthetic response.

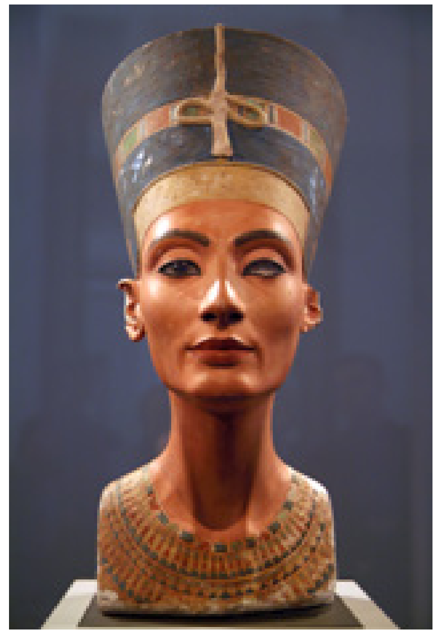
5 See Alix Rule and David Levine, 'International Art English: On the rise—and the space—of the art-world press release', *Triple Canopy*, issue no. 16, 30 July 2012, http://www.canopycanopycanopy.com/contents/international_art_english





Cloaca Professional
2010
Wim Delvoye

Bullet Hole
1988–93
Mat Collishaw



Composite digitally evolved faces

Stills from the Facemorph movie created by Dr Victor Johnston at New Mexico State University: computer-generated faces evolved and judged 'most beautiful' in an expansive online voting experiment.

Bust of Nerfertiti
Tel el-Amarna, Egypt
18th Dynasty, c. 1351–34 BCE

The Birth of Venus
c. 1486
Sandro Botticelli

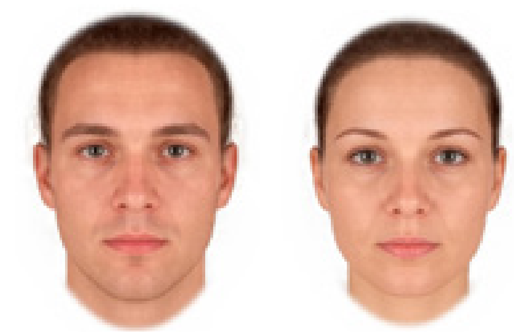
The psychology of aesthetics itself may be divided into a number of sub-topics. What makes faces and bodies beautiful? What makes environments beautiful? What makes colours, shapes and abstract patterns beautiful?

Let's look at our fellow humans first.

Although people say that beauty is in the eye of the beholder, that is only somewhat true. There is also a common core of aesthetic responses beneath the undeniable variation across human cultures. Think about Nefertiti or Botticelli's Venus—each a babe by modern standards.

Children agree on who is the prettiest or best-looking child in their group, and their judgements correlate with adults'. Babies gaze longer at pretty faces than not-so-pretty faces. And if you look across cultures, someone outside a culture will tend to agree with the people inside the culture as to who is the most attractive individual among the people within that culture. In an experiment by Dr Victor Johnston at New Mexico State University, there was even agreement about artificial faces that were 'evolved' when images of randomly varied combinations of eye size, nose, lip thickness, jaw-shape and so on were judged by an online crowd-sourced group and narrowed down to the four most pleasing, which were then re-combined and re-judged, and so on, through several thousand generations. When I show the end result to my psychology students, there are certainly some appreciative oohs and ahhhs.

A specific contributor to the attractiveness of faces is having features of average size and shape. The greater the number of faces you put into a computer composite (which means that the resulting composite is increasingly average), the more attractive the composite becomes. This was discovered in the nineteenth century, when Francis Galton superimposed negatives of photographs of numerous convicted felons in a (misguided) attempt to discover the 'archetype' of the criminal face. Contrary to predictions, he stumbled over the fact that the physical average of a large number of faces will tend to be more attractive than the individual faces
that went into it.



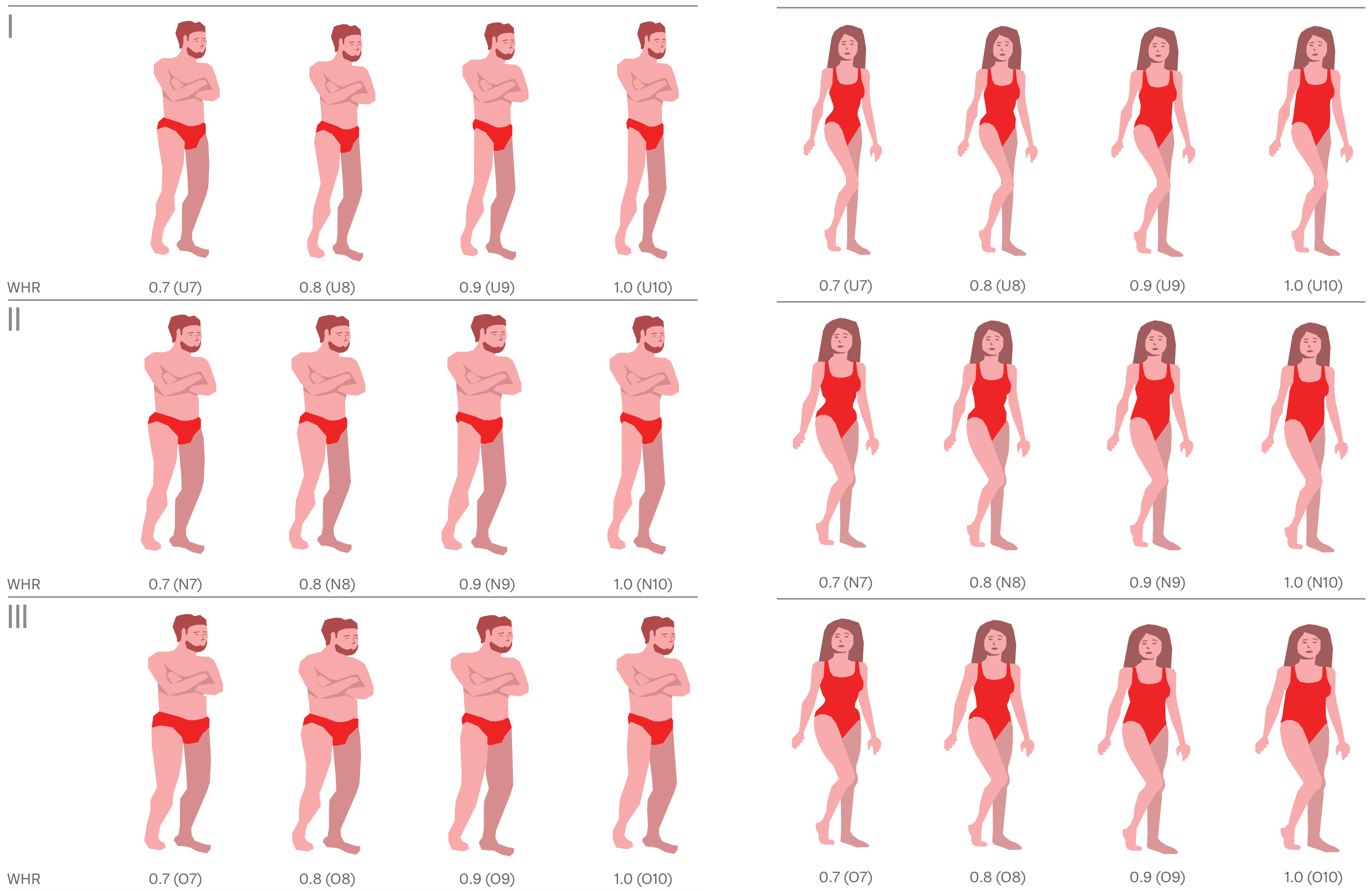
Averaged human faces

The averageness effect is something that could have been predicted *a priori* by an evolutionary biologist. Most of the variation seen within a population at any one time consists of mutations and developmental noise. In general, the average phenotype in a population is close to the optimum that natural selection is selecting for. There are obviously rare exceptions—otherwise there would be no evolution at all. However in any given snapshot in the evolutionary process, your best bet for fitness is the individual that is closest to the population average. And these probabilities have affected our aesthetic responses to faces.

More generally, at heart human beauty is an external cue to the biological fitness of others, especially as possible mates—we use beauty as a surrogate for a measure of the health and expected lifetime fertility of a potential co-parent. Crucially, one has to distinguish between what evolutionary biologists sometimes call *proximate* and *ultimate* explanations for our emotional responses. These are utterly different, and it's important never to confuse them! A proximate explanation refers to what is actually going on in the minds of individuals as they react to or do something. An ultimate explanation refers to the selective pressures that were responsible for the proximate responses, namely which response actually increased the rate of reproduction of the individual's ancestors over the long term. In this case, when I say that people are attracted to certain features of faces because they are cues to health and fertility (an ultimate explanation), it does not mean that they are (proximately) sussing out the person's actual health and fertility in the hopes of having children with that person (or with that computer-generated composite) as soon as possible.

Jennifer
from the series 'Heads and Tales'
2007–8
Heide Hatry

Heide Hatry played as an artist upon our instinctive reactions when she sculpted women's faces using slaughtered animal skins.



Waist-hip ratios of women and men.

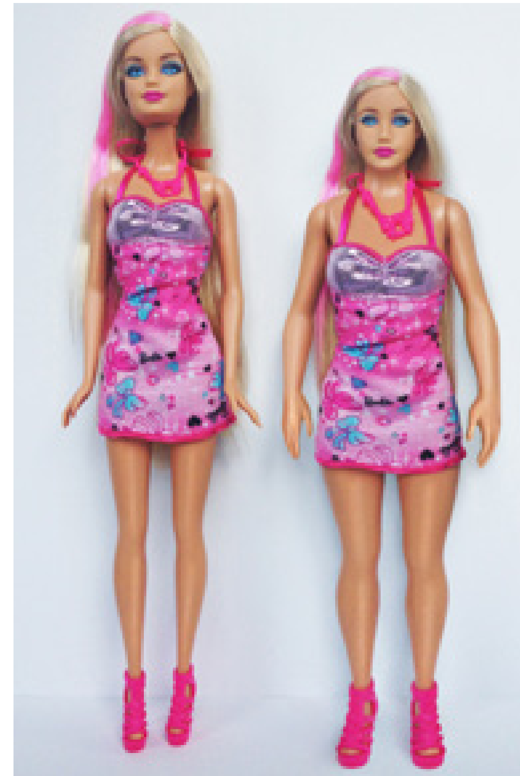
Other than averageness, what are those cues? Some are gender-neutral: they apply both to men looking at women and women looking at men. Most things that correlate with health make a person attractive—symmetry, clear skin, good teeth, a full head of lustrous hair. Conversely, many signs of disease, congenital disorders or aging make a face less attractive. Look at Heide Hatry's Jennifer. Also, in general, good-looking faces tend to be symmetrical (think Denzel Washington versus Lyle Lovett) and this is true not only of humans, but a wide variety of species. In experiments, if you generate a symmetrical composite by combining one half of a face with its mirror image, that is enough to make it more attractive. And in studies with animals, random deviations from species-typical symmetry tend to make the animal less attractive as a mate. The ultimate reason is that corruptions in development, like those caused by parasites and mutagens, can disrupt symmetry. Brandon Ballengée's frogs in the exhibition are an extreme example. They are fascinating to us, though the frogs themselves would have trouble getting dates.

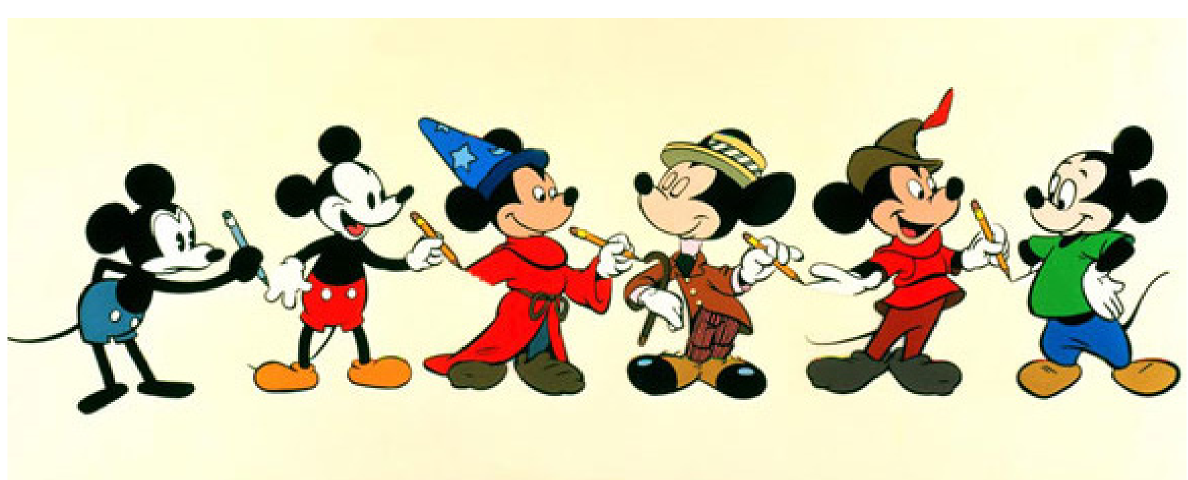
As explained earlier, for something to be an adaptation there must be some independent criterion by which the adaptation can be shown to lead to better reproduction. In this case, it is that symmetry is an indication of successful development and hence a fitter mate.

Other cues to fertility are gender-specific, primarily so that prospective mates can accurately pick the opposite sex in the first place. For example, the effects of the hormone testosterone, which differentiates men from women, tend to make a male face more attractive—building up bone in the jaw and brow ridge—and a female face less so. In addition, because men and women have different lifetime trajectories of reproductive capacity (men don't have the reproductive equivalent of menopause) and because women can be infertile if they are pregnant or breast-feeding (i.e. occupied with another man's offspring), signs of youth and nulliparity, that is, not having borne previous offspring, are rated highly in female humans. These cues may be the common denominator behind otherwise disparate styles and fashions in beauty, seen, for example, across the subjects of François Boucher's and Pierre-Auguste Renoir's paintings in Paris 140 years apart.

Similar factors are at play in the differentiation of body shape, where the ratios between parts of the body that distinguish males from females, and that distinguish fertile people from infertile ones, are also perceptual criteria for beauty. For example, the waist–hip ratio (WHR) of a woman (the circumference of the waist divided by the circumference of the hips) is often used by endocrinologists as a quick visual way of assessing fertility before they even start testing for hormone levels. (Women store more fat around their hips to get them through pregnancy.) Research indicates that WHR is an accurate somatic indicator of both reproductive endocrinological status and long-term health, with 0.7 for women and 0.9 for men as the optima. That means that there is independent empirical evidence that attention to WHR is a legitimate way to estimate the fitness of prospective mates and hence is a candidate for a biological adaptation. Several studies have suggested that even though preferences for overall body size differs a great deal across cultures, countries and millennia, there is far less difference in people's preferences for certain body proportions.[6]

6 The significance of WHR as an indicator of attractiveness was first theorised by evolutionary psychologist Devendra Singh at the University of Texas in 1993; for his recent update on the concept, see Devendra Singh, 'Mate value at a glance: Relationship of waist-to-hip ratio to health, fecundity and attractiveness', *Neuroendocrinology Letters*, special issue, suppl. 4, vol. 23, December 2002, pp. 81–91.



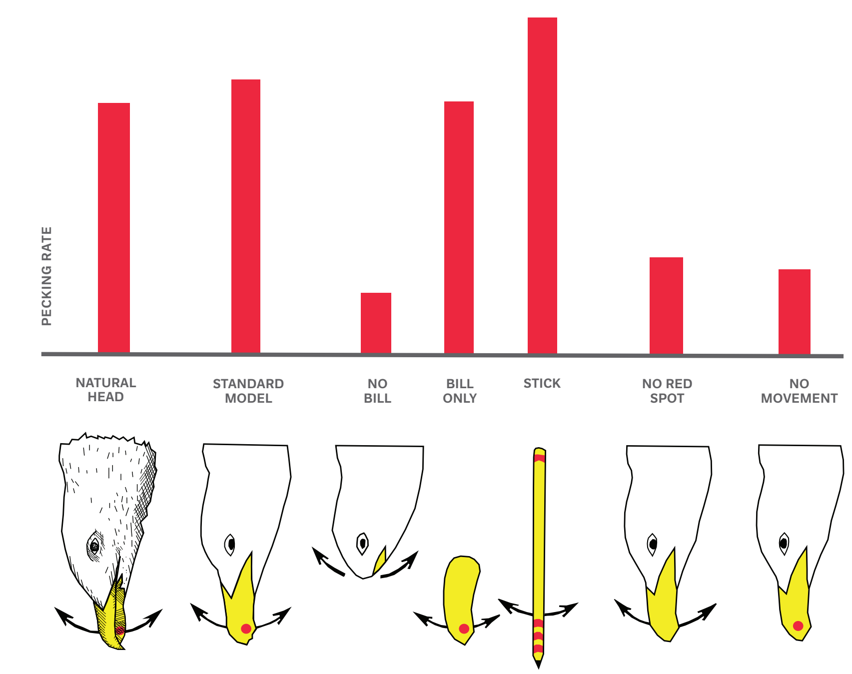


Barbie™ doll shown next to the Lammily doll developed by Nikolay Lamm, which is based on standard body propotions

From Stephen J. Gould's essay, 'Mickey Mouse meets Konrad Lorenz', originally published in the Smithsonian Institution's Natural History, May 1979.

Artificial displays, whether designed for commercial advertising or flattering portraiture, often exaggerate the features that men and women find attractive, producing what biologists call 'supernormal stimuli'—those that fall outside the range found in nature and that elicit a greater-than-normal response from perceivers. Clothing, cosmetic surgery, makeup, exercise regimes and photoshopping all work in similar ways, creating images of men with outsize shoulders and narrow hips, or the anatomically improbable bust–waist–hip ratios of a contemporary Barbie™ doll.

Here again, a trait that is exploited by artificers can be shown to have a basis in our evolutionary biology. The concept of a supernormal stimulus was first proposed by the Dutch biologist Nikolaas Tinbergen, who shared a Nobel Prize in 1973 for his contributions to ethology. Tinbergen showed that an artificial object could be a stronger stimulus or releaser for an instinct than the natural object for which that instinct originally evolved. For example, a garish yellow stick with three red stripes elicited a higher rate of pecking by seagull chicks than a realistic effigy of their parent's bill, which has only one red spot.[7]



Pecking rate of Herring Gull chicks in response to natural and artifical stimuli

Reproduction doesn't just depend on mating, of course; it also requires that we protect, nourish, teach and cherish the results of mating, which is to say, children. Another ethologist, Konrad Lorenz, who shared the Nobel with Tinbergen, noted that the geometry of young faces and bodies produces a desire to protect and nurture that creature—the feature we call 'cuteness'. As with all cues to beauty, artificers may exaggerate these signs into the supernormal range, such as in teddy bears, anime and children's cartoons. In an essay on the evolution of Mickey Mouse, the biologist Stephen Jay Gould showed how Disney animators increasingly designed the 'cuteness' features identified by Lorenz into those of the famous rodent as he came to represent the company.

7 Nikolaas Tinbergen (1907–88) shared the 1973 Nobel Prize in Physiology or Medicine with Karl von Frisch and Konrad Lorenz for their work on animal behaviour. His important publications include *The Study of Instinct*, Clarendon Press, Oxford, 1951 and *The Herring Gull's World*, Collins, London, 1953 (in which herring gull chicks respond more enthusiastically to a stick with painted red and yellow markings than they do to their feeding parents).

Our aesthetic reactions to the natural world also may be explained, at least in part, as responses to cues to evolutionarily propitious things. Some of these cues may be seen in depictions of plants and animals, from the caves of Lascaux to soporific motel art. Humans are deeply interested in animals: we eat them; they eat us. Our fates are enmeshed with theirs and that makes them objects of fascination.

We like flowers for a different reason: they are a potent biological cue for selecting a productive environment—since flowers now can mean fruit later. Thus we have evolved a fascination with the visual appearance, habitat, and the reproductive cycles of living things upon which humans depend for food and other necessities. And we can indulge this fascination through botanical art and works of great ornithological beauty such as John James Audubon's *The Birds of America* or John Lewin's *Birds of New Holland*. Flowers, fruit and leaves also have proliferated on ceramics, decorative carving, metalware and jewels for centuries. Textiles and wallpaper designs using outsize and often unnaturally coloured floral motifs are other supernormal stimuli that give us visual pleasure.

Early Autumn (detail)
13th century
Qian Xuan (China, 1235–1305)

Cattleya Orchid, Two Hummingbirds and a Beetle
c. 1875–90
Martin Johnson Heade

Who Says Your Feelings Have to Make Sense
(detail)
2016
Aspassio Haronitaki

What about landscapes? The ability to select a place to live and breed is fundamental to survival, and has led in *Homo sapiens* to aesthetic and emotional responses to certain kinds of geographical features. This is the theory proposed by the distinguished biologist Gordon Orians: the zoological phenomenon that animal behaviourists call 'habitat selection' is the same as the psychological phenomenon that artists and landscape architects call 'environmental aesthetics'. Once again, our eye for beauty is not an inexplicable preference for arbitrary shapes and colours but can be understood as an instinct for choosing surroundings that are safe, healthful and informative. Essentially, humans seek safe, legible, fertile, life-supporting environments, and find beauty in representations that distil and concentrate these cues, such as the availability of water, the presence of flowering and fruiting plants and large animals, an elevated perspective, views to the horizon, and protected vantage points—a family of cues that has been summed up as 'prospect and refuge'.[8]

Orians proposes that the single optimal habitat for a human is something close to the African savannah in which our ancestors evolved. But it's clearly not our only habitat. Humans are a weedy species that now inhabits most of the globe, that we are sufficiently adaptable to move into less hospitable environments when necessary. Nonetheless, 90 per cent of human evolution was spent in the savannah: semi-open grassland with clumps of trees and bodies of water. Perhaps not coincidentally, when people engineer an environment to be attractive—Capability Brown laying out an eighteenth-century English gentleman's estate, for example, or John Glover painting an indigenous Tasmanian Arcadia—it will often have the salient features of a savannah, sometimes more than a savannah itself!

Urban planners and landscape architects implicitly understand these principles, designing parks, golf courses and pedestrian-friendly cities that impart a feeling of calm. They evoke a response in which you want to stay a while and explore around the next bend, and it feels like it should be easy to work out where everything is and how to get to where you want.

As I have been emphasising in the case of other aesthetic reactions, though, *aesthetics* is not the same thing as *art*. Sophisticated, postmodern, conceptual and avant-garde artificers may deliberately choose *not* to design the prettiest or more comfortable scene. Perhaps some of the architectural features of Mona itself were designed to be disconcerting in a way that forces people to challenge their own conventional and comfortable surroundings.

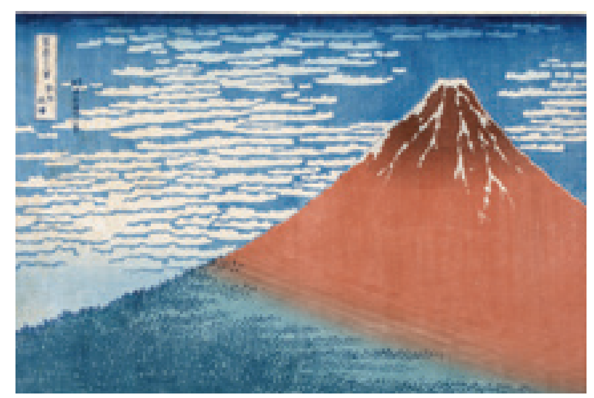
Scene on the Hudson
c. 1864
William Sonntag

The Bath of Diana, Van Diemen's Land
1837
John Glover

The Brockman Family at Beachborough—Temple Pond with Temple in the Distance at Left
c. 1744–46
Edward Haytley

8 Gordon Orians, Emeritus of Biology at the University of Washington, Seattle, has recently elaborated on his theory in *Snakes, Sunrises and Shakespeare—how evolution shapes our loves and fears*, University of Chicago Press, 2014.

Mona museum interior with main stairway



Cognitive legibility is yet another general feature of visual aesthetics: though I have introduced it in connection with landscapes, it applies to every other visual experience.

Everything we see begins as a pattern of light falling upon our retinas. Light reflects off an object, is focused by the cornea and lens as an image on the retina, which then stimulates rods and cones (the photoreceptors that convert varying intensities into neurophysiological activity). Those signals are sent through the optic nerve to the visual cortex in the back of the brain. Imagine a spreadsheet consisting of a million numbers, each corresponding to the intensity of light at one spot on the retina. There are no faces there, no leaves, no chairs, no cars, no clothing—just numbers. What the brain must do is crunch those numbers and extract from them the three-dimensional arrangement of surfaces and objects in the world that gave rise to that spreadsheet.

This feat of perception is not a passive process. Our brains have evolved to seek out certain non-random patterns, the better to infer the presence, shapes, and compositions of three-dimensional objects. And these demands may have given rise to another dimension of visual aesthetics. The brain is constantly asking, 'Can I make sense of the pixels coming in from the eyes?', and it gives us a sense of cognitive satisfaction when we can do so. It feels good when your visual system is functioning; when you are successfully focusing your eyes to give yourself a sharp image and converging them so you are not seeing double. It also feels good to be in a parsable environment; one where you can see where one object ends and the next one begins.

It is no accident that many of the criteria for patterns that we find pleasing in photographs and decorative art correlate closely with maximum extraction of information. Information-rich visuals—those with colour, contrast, sharpness, symmetry, repetition, separation of figure from background, perspective—are all more pleasing to look at than blurry, muddy, obstructed, washed out, chaotically arranged patches, to say nothing of undifferentiated sludge or random pixels. Not coincidentally, these are the kinds of patterns that correlate with the presence of coherent and potent objects in the world, including plants, animals, humans and their products.

Even abstract patterns, such as symmetrical decorations, or life like but not living patterns such as 'smiley' automobile grilles, are often supernormal versions of the kinds of information that a visual system looks for in making sense of the world.

Plate with botanical decoration
London, England, Chelsea Porcelain Factory
c. 1753–55

Gaifu Kaisei (Fuji in Fair Weather) from the series 'Thirty-six Views of Mount Fuji'
c. 1830–32
Katsushika Hokusai

Letter Rack
c.1698
Edwaert Collier

Portrait of Bridget Riley
1963
Romano Cagnoni

Once again this does not mean that sophisticated art can be equated with stimuli that tickle our basic aesthetic responses. Artists will sometimes deliberately challenge the viewer's unconscious ability to make sense of the visual world. An excellent example that sits at the intersection of art and visual perception is Ron James's photograph of Woody the Dalmatian dog, first published in *Life* magazine in 1965 and reproduced in many psychology textbooks and monographs. Paintings by op artists like Bridget Riley also exploit the surprise and puzzlement of displays that defy the brain's ordinary expectations on how patterns in the eye correlate with objects in the world.

To sum up: I've explored the hypothesis that art—or at least many forms of art—exploit visual aesthetics for no direct adaptive reason. Making and looking at art does not, and probably never did, result in more surviving offspring. There are, to be sure, adaptive explanations why certain visual patterns give human beings aesthetic, intellectual and sexual pleasure: they are cues to understandable, safe, productive, nutritious or fertile things in the world. And since we are a toolmaking, technological species, one of the things that we can do with our ingenuity, aside from trapping animals, detoxifying plants, conspiring against our enemies and so on, is to create purified, concentrated, supernormal, artificial sources of these visual pleasures, just for the sheer enjoyment experienced by both maker and viewer. Often an artist will combine many of these cues into a single work—the work will not only depict a biologically interesting object, person or scene, but do so with bold colours, shapes, symmetries and repetitions, using rare materials and requiring extraordinary craftsmanship. The philosopher Nelson Goodman referred to this feature of compelling art as 'repleteness'. In other words many works of conventional visual art are things we have invented in order to enjoy them. Conversely, many works of subversive, challenging, sophisticated and postmodern art are invented to defy these sources of easy pleasure and thereby force viewers to reflect on their ordinary expectations and conventional responses.

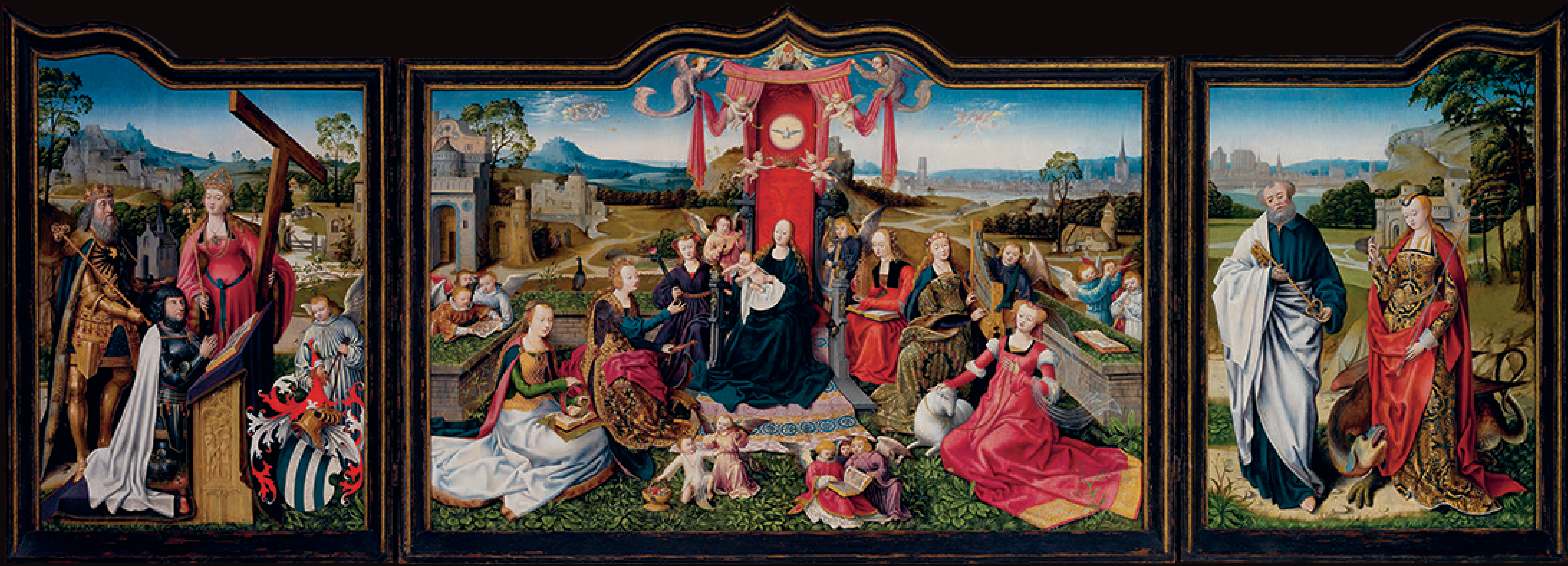
In explaining the hypothesis that conventional art is a pleasure technology, I once used the analogy of cheesecake: something we enjoy not because natural selection specifically adapted us to do so, but because we invented it for our own enjoyment. (Admittedly, connoisseurs of art hate the analogy, because it seems to disrespect their subject, but my goal was clarity, nor flattery.) What is the adaptive function of cheesecake?—The answer is, obviously, none. Cheesecake is a by-product of our evolved tastes and our evolved inventiveness. This doesn't mean that we can ignore adaptation in understanding why people like cheesecake: each kind of ingredient was adaptive in the world in which we evolved. It is a package of supernormal doses of things that in more moderate and natural amounts clearly were adaptive, like sugar, fat, protein. But if you ask 'Why is cheesecake adaptive?', you are posing the wrong question. Humans are intelligent enough to collect things that in their natural settings were wholesome or useful and use them to create bombs of pure pleasure.

Why do we make cheesecake? Why do we make conventional art? Because we can.

Amarna
2015
James Turrell

THE PSYCHOLOGY OF STATUS
CONSPICUOUS DISPLAY, CONSPICUOUS CONSUMPTION

Mortuary amulets mounted
as a modern pendant
Egypt, Late Period, 26th Dynasty,
c. 664–525 BCE; possibly mounted
by Cartier, 20th century



Virgin and Child with Saints
Triptych of the Madonna and Child with saints and angel musicians within a *hortus conclusus* (central panel), the Emperor Charlemagne, St Helena and donor (left-hand shutter panel), and St Peter and St Margaret (right-hand shutter panel)
Cologne School, c. 1510–20

Kantharos
Panticapaeum, Greek, c. 320–250 BCE

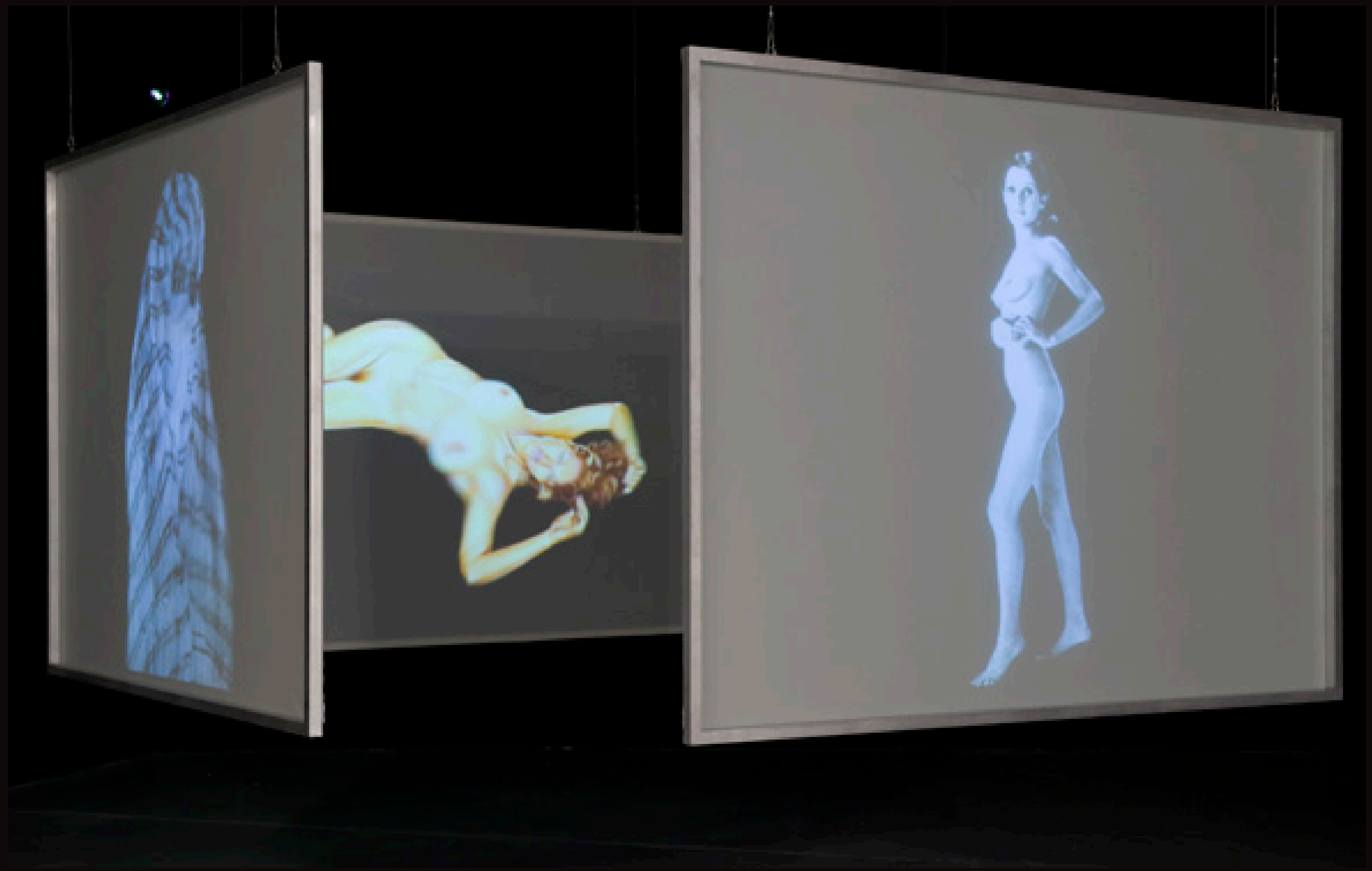
Parure in fitted case, comprising necklace, nine brooches, bangle and hair ornament
Italy or France, c. 1840

Wasekaseka—neck ornament
Fiji, 19th century

Anthropoid sarcophagi for a man and
a woman
North Eastern Democratic Republic
of Congo, Mangbetu people, eastern
neighbours of the Ngata, 20th century

Shrine panel
Nigeria, Kalabari group, Ijo people,
mid 20th century

THE PSYCHOLOGY OF BEAUTY
FACES AND BODIES



Les Avatars de Vénus
2007–11
Jean-Jacques Lebel

Jeune femme se baignant
(Young Woman Bathing)
1888
Pierre-Auguste Renoir

Architectural relief depicting two
celestial female figures (*Surasundaris*)
Madhya Pradesh, India, Chandella
period, c. 800–1315, 10th–11th century

Le panier mystérieux
(The Mysterious Basket)
1748
François Boucher

Wedded
1882
Frederic Leighton

Kneeling ancestor figure
Egypt, most probably 25th Dynasty,
c. 770–657 BCE

Funerary head covering for a man
Egypt, Roman period, c. 100–200 CE

Teucer
1889, cast c. 1904
Hamo Thornycroft

Loïe Fuller
c. 1900
François-Raoul Larche

DFA 156: Persephonê

2012
Brandon Ballengée

DFA 203: Skeiron
2013
Brandon Ballengée

DFA 186: Hadês
2012
Brandon Ballengée

THE PSYCHOLOGY OF BEAUTY
ANIMALS AND PLANTS

Bowl with aquatic decoration
(Nile perch and lotus)
Egypt, New Kingdom, 18th Dynasty
c. 1550–1295 BCE

Feline effigy vessel
Central Arizona, America, Anasazi,
1200–1500 CE

Red-figure *skyphos* depicting an owl
Athens, Greek, 500–400 BCE

Cow with lowered head
Nimrud, Mesopotamia (Modern Iraq),
Neo-Assyrian, 9th–8th century BCE

Dish
c. 1580–1620
School of Bernard Palissy

Glazed tiles
Damascus, Syria, Ottoman period
(1290–1922), 16th century

Dish, with tulips and poppies
Turkey, Ottoman period (1290–1922),
16th century

Plate with botanical decoration
London, England, Chelsea Porcelain
Factory, c. 1753–55

Partridge tureen
Thuringia, Germany, c. 1760

Study of Varied Flowers with a Hummingbird
c. 1870
Martin Johnson Heade

Study of Three Magnolia Blossoms
c. 1883–88
Martin Johnson Heade

Cattleya Orchid, Two Hummingbirds and a Beetle
c. 1875–90
Martin Johnson Heade

The Birds of America: From Original Drawings
1827–38
John James Audubon

Lobster
Japan, Meiji era (1868–1912),
c. 1880

Crab
Japan, Meiji era (1868–1912),
c. 1880

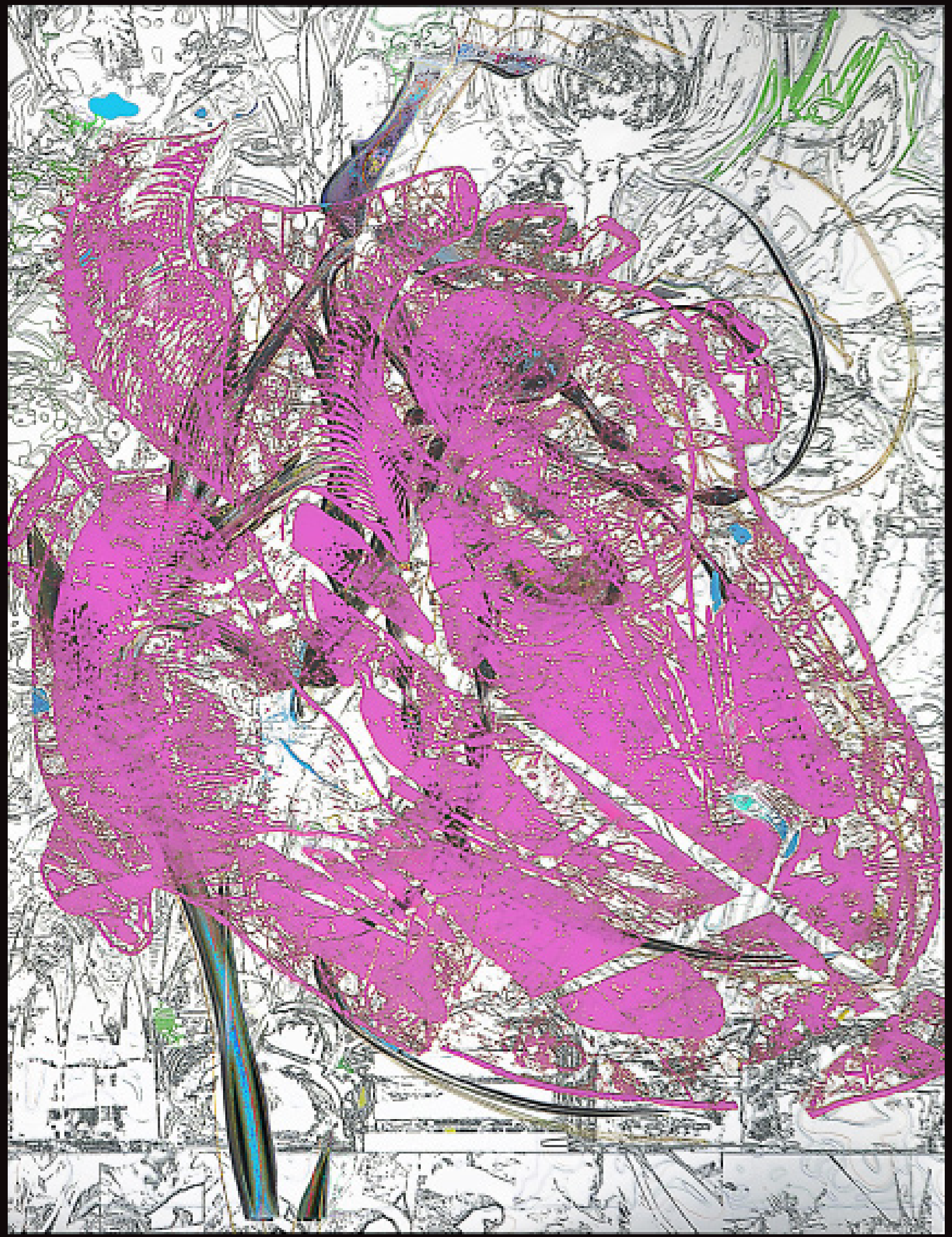
Beyond the Frame
2006
Lin Jiun-Ting

Aures rubri cuniculorum, capita fetarum musum, palpebrae vaccae
(Beet-dyed Rabbit Ears, Heads of Baby Mice and Cows' Eyelashes)
2013
Heide Hatry

Pinnae caudales cancrorum, präputium penis porci
(Tail Fins of Crabs, Foreskin of Pig)
2013
Heide Hatry

Plica vocalis gallinae
(Vocal Cord of a Chicken)
from the series 'Not a Rose'
2010
Heide Hatry

Parvolae partes ventris tauri, linguae anitum (Small Parts of Stomach of Bull and Duck Tongues)
from the series 'Not a Rose'
2007
Heide Hatry



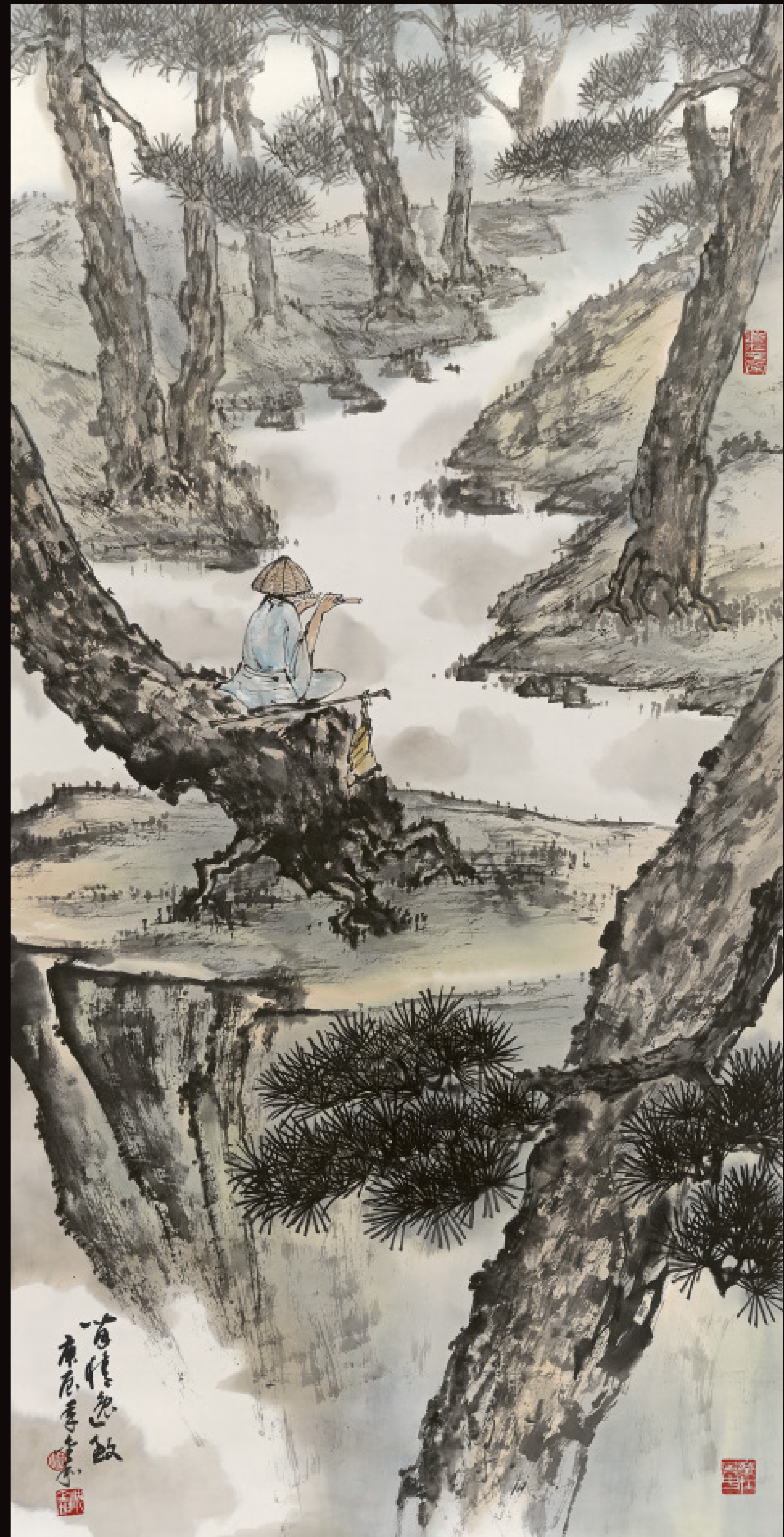
PREVIOUS PAGES
Who Says Your Feelings Have to Make Sense (details)
2016
Aspassio Haronitaki

THE PSYCHOLOGY OF BEAUTY
PROSPECT AND REFUGE

The Bath of Diana, Van Diemen's Land
1837
John Glover

Scene on the Hudson
c. 1864
William Sonntag

The Wheat Field
1876
John Clayton Adams



Playing flute in a pine forest, the joy of quietude
2000
Kim Hoa Tram

Painting
1977
Peter Booth

Untitled 1994/95
1994–95
Bill Henson

DECODING VISUAL INFORMATION

Amphora: The Woodhouse amphora
Cyprus, Cypro-Archaic I, 750–600 BCE

Shell necklace
Oaxaca, Mexico, Mixtec,
Early Post-Classic, 900–1200 CE

Shell necklace
1995
Val Macsween

Shell necklace
2015
Lola Greeno

Shell necklace
2015
Lola Greeno

Collecting basket
2016
Audrey Frost

Woven mat
1994
Audrey Frost

Shell necklace
2015
Lola Greeno

Shell necklace
1995
Lola Greeno

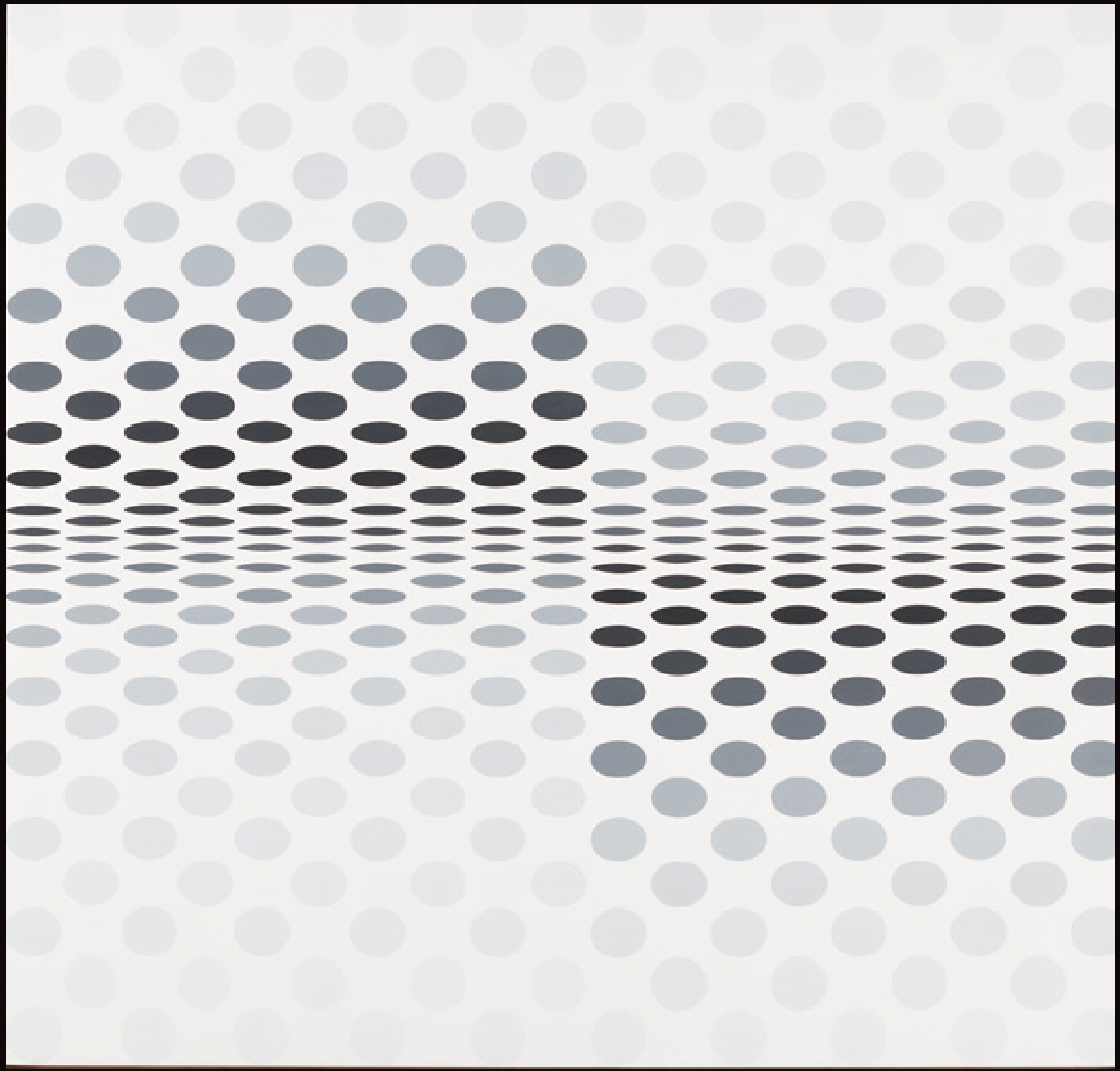
Butterfly mask
Burkina Faso, West Africa, Bwa people,
20th century

Letter Rack
c. 1698
Edwaert Collier

Gaifu kaisei
(Fuji in Fair Weather)
from the series
'Thirty-six Views of Mount Fuji'
c. 1830–32
Katsushika Hokusai

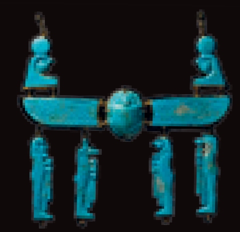
Tōkaidō Hodogaya
(Hodogaya on the Tōkaidō)
from the series
'Thirty-six Views of Mount Fuji'
c. 1830–32
Katsushika Hokusai

Woody the Dalmatian
1965
Ron James



Remember
1964
Bridget Riley

LIST OF WORKS



Mortuary amulets mounted as a modern pendant
Egypt, Late Period, 26th Dynasty, c. 664–525 BCE; possibly mounted by Cartier, 20th century

Glazed composition (faience), gold
16 x 16.2 cm
Mona
2003.155

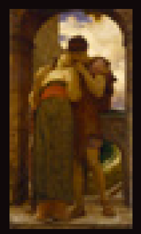
Virgin and Child with Saints
Triptych of the Madonna and Child with saints and angel musicians within a *hortus conclusus* (central panel), the Emperor Charlemagne, St Helena and donor (left-hand shutter panel), and St Peter and St Margaret (right-hand shutter panel)

Cologne School, c.1510–20

Oil on three oak panels
126.5 x 354 cm overall
National Gallery of Australia, Canberra
Purchased with the assistance of James O. Fairfax AO and the Nerissa Johnson Bequest 2001
NGA 2001.19.A-C

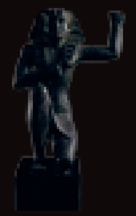
Kantharos
Panticapaeum, Greek, c. 320–250 BCE

Beaten gold
Height 16 cm
Mona
2000.006



Wedded
1882
Frederic Leighton

Born 1830, Scarborough, England; died, 1896, London, England
Oil on canvas
145.4 x 81.3 cm
Art Gallery of New South Wales, Sydney
Purchased 1882
784



Kneeling ancestor figure
Egypt, most probably 25th Dynasty, c. 770–657 BCE

Hollow-cast bronze
23 x 16.8 x 15.4 cm
Mona
2000.004

Funerary head covering for a man
Egypt, Roman period, c. 100–200 CE

Plaster, pigment, with inset glass eyes
26 x 16 x 14 cm
Mona
2003.017

Loïe Fuller
c. 1900
François-Raoul Larche

Born 1860, Saint-André-de-Cubzac, France; died 1912, Paris, France
Gilded bronze electric lamp in the shape of the American dancer, Loïe Fuller
45.6 x 23 x 25.5 cm
National Gallery of Australia, Canberra
Purchased 1989
1989.510

Parure in fitted case, comprising necklace, nine brooches, bangle and hair ornament
Italy or France, c. 1840

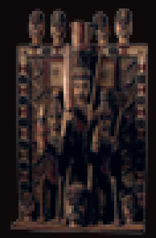
Chased and embossed 18-carat gold and red coral, tortoiseshell, leather
Various dimensions
Museum of Applied Arts and Sciences, Sydney
Donated through the Australian Government Cultural Gifts Program by Anne Schofield AM, 2002
2003/9/1

Wasekaseka—Neck ornament
Fiji, 19th century

Split and polished sperm whale teeth, coconut fibre
7 x 52 x 15 cm; diameter as worn 40 cm
Museum Victoria, Melbourne
Gift of John Connell, 1913
X29654

Anthropoid sarcophagi for a man and a woman
North Eastern Democratic Republic of Congo, Mangbetu people, Eastern neighbours of the Ngata, 20th century

Carved and etched wood, natural polychrome pigments
215 x 44 x 20 cm; 195 x 45 x 26 cm
Ann Porteus, Sidewalk Tribal Gallery

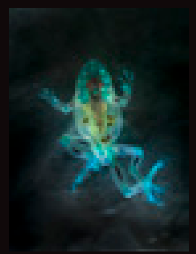


Shrine panel
Nigeria, Kalabari group Ijo people, mid 20th century

Carved wood, rattan, raffia, natural polychrome pigments
195 x 111.4 cm
Ann Porteus, Sidewalk Tribal Gallery

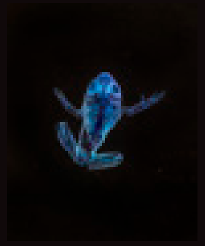
Teucer
1889
Hamo Thornycroft

Born 1850, London, England; died 1925, Oxford, England
Cast bronze
72 x 48 x 21 cm
On loan from the John Schaeffer Collection



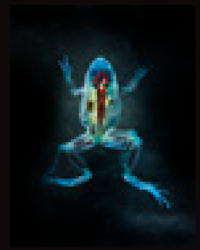
DFA 156: Persephonē
2012
Brandon Ballengée

Born 1974, Sandusky, OH, USA; lives and works in New York, NY, USA
Unique digital-C print on watercolour paper; cleared and stained Pacific tree frog collected in Aptos, California in scientific collaboration with Stanley K. Sessions
116.8 x 86.4 cm
Courtesy of Ronald Feldman Fine Arts, New York



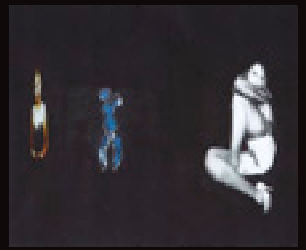
DFA 203: Skeiron
2013
Brandon Ballengée

Born 1974, Sandusky, OH, USA; lives and works in New York, NY, USA
Unique Iris print on Arches watercolour paper; cleared and stained Squirrel tree frog collected in Devil's Garden, Florida in scientific collaboration with Peter Henry Warny
116.8 x 86.4 cm
Courtesy of Ronald Feldman Fine Arts, New York



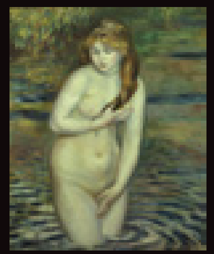
DFA 186: Hadēs
2012
Brandon Ballengée

Born 1974, Sandusky, OH, USA; lives and works in New York, NY, USA
Unique digital-C print on watercolour paper; cleared and stained Pacific tree frog collected in Aptos, California in scientific collaboration with Stanley K. Sessions
116.8 x 86.4 cm
Collection Suzaaan Boettger & David Dorfman, New York



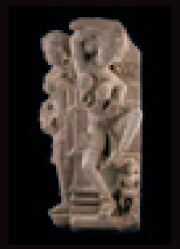
Les Avatars de Vénus
2007–11
Jean-Jacques Lebel

Born 1936, Paris, France, where he lives and works
Four-screen video installation
Dimensions variable
Mona
2016.017



Jeune femme se baignant
(Young Woman Bathing)
1888
Pierre-Auguste Renoir

Born 1841, Limoges, France; died 1919, Cagnes-sur-Mer, France
Oil on canvas
81 by 65.5 cm
Private collection

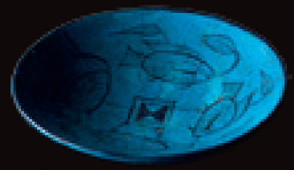


Architectural relief depicting two celestial female figures (*Surasundaris*)
Madhya Pradesh, India, Chandella period, c. 800–1315, 10th–11th century

Sandstone
Height 102 cm
Art Gallery of South Australia, Adelaide
James & Diana Ramsay Fund through the Art Gallery of South Australia Foundation 2005
20054S5

Le panier mystérieux
(The Mysterious Basket)
1748
François Boucher

Born 1703, Paris, France; died 1770 in Paris
Oil on canvas
92.7 x 78.9 cm
National Gallery of Victoria, Melbourne
Felton Bequest, 1982
E2-1982



Bowl with aquatic decoration (Nile perch and lotus)
Egypt, New Kingdom, 18th Dynasty, c. 1550–1295 BCE

Glazed composition (faience)
Height 3 cm; diameter 17.5 cm
Mona
2004.071

Feline effigy vessel
Central Arizona, North America, Anasazi, 1200–1500 CE

Fired clay with painted decoration
18 x 11 x 20.5 cm
Mona
2001.002

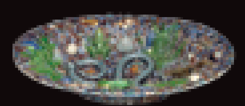
Red-figure *skyphos* depicting an owl
Athens, Greek, 500–400 BCE

Fired clay with slip-painted decoration
10 x 16 x 8 cm
Mona
1999.119

Cow with lowered head; Youth holding a lotus; Lotus flower
Nimrud, Mesopotamia (Modern Iraq), Neo-Assyrian, 9th–8th century BCE

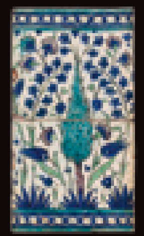
Ivory
4.4 x 11.2 x .95 cm; 4.6 x 2.9 x 0.9cm; 5 x 6.6 x 0.7 cm
Middle Eastern Studies Collection Classics and Archaeology Collection, The University of Melbourne Art Collection
0000.0421; 0000.0422; 0000.0423

LIST OF WORKS



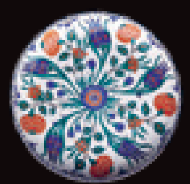
Dish
c. 1580–1620
School of Bernard Palissy

Born 1509, St Avit, France; died 1590, Paris
Moulded and glazed earthenware
National Gallery of Victoria, Melbourne
Felton Bequest, 1939



Glazed tiles
Damascus, Syria, Ottoman period (1290–1922), 16th century

Earthenware, glaze decoration
45.8 x 25 cm
Art Gallery of South Australia, Adelaide 20035C43
Gift of William Bowmore, AO, OBE, through the Art Gallery of South Australia Foundation 2003



Dish, with tulips and poppies
Turkey, Ottoman period (1290–1922), 16th century

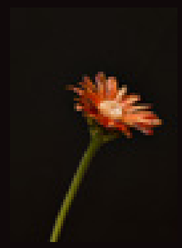
Iznik earthenware, glaze decoration
Diameter 28.7 cm
Art Gallery of South Australia, Adelaide 20035C39
Gift of William Bowmore, AO, OBE, through the Art Gallery of South Australia Foundation 2003

Plate with botanical decoration
London, England, Chelsea Porcelain Factory, c. 1753–55

Porcelain (soft-paste)
2.7 x 24.6 cm
National Gallery of Victoria, Melbourne
Anonymous Bequest, 1980
D34-1980

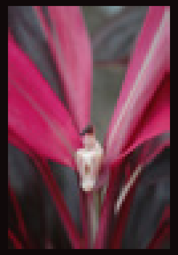
Aures rubri cuniculorum, capita fetarum musum, palpebrae vaccae (Beet-dyed Rabbit Ears, Heads of Baby Mice and Cows' eyelashes)
2013
Heide Hatry

Born 1965, Sindelfingen, West Germany; lives and works in New York, NY, USA and Berlin, Germany
Silver halide print
Height 22 inches
Courtesy of the artist and Stux+Haller Gallery



Pinnae caudales cancrorum, präputium penis porci (Tail Fins of Crabs, Foreskin of Pig)
2013
Heide Hatry

Born 1965, Sindelfingen, West Germany; lives and works in New York, NY, USA and Berlin, Germany
Silver halide print
Height 30 inches
Courtesy of the artist and Stux+Haller Gallery



Plica vocalis gallinae (Vocal Cord of a Chicken)
from the series 'Not a Rose'
2010
Heide Hatry

Born 1965, Sindelfingen, West Germany; lives and works in New York, NY, USA and Berlin, Germany
Silver halide print
Height 22 inches
Courtesy of the artist and Stux+Haller Gallery

Parvolae partes ventris tauri, linguae anitum (Small Parts of Stomach of Bull and Duck Tongues)
from the series 'Not a Rose'
2007
Heide Hatry

Born 1965, Sindelfingen, West Germany; lives and works in New York, NY, USA and Berlin, Germany
Silver halide print
Height 22 inches
Courtesy of the artist and Stux+Haller Gallery
Purchased 1882

Partridge tureen
Thuringia, Germany, c. 1760

Porcelain (hard-paste)
11.1 x 13.9 x 9.2 cm
National Gallery of Victoria, Melbourne
The Colin Templeton Collection. Gift of Mrs Colin Templeton, 1942
294.a-b-D4

Study of Varied Flowers with a Hummingbird
c. 1870
Martin Johnson Heade

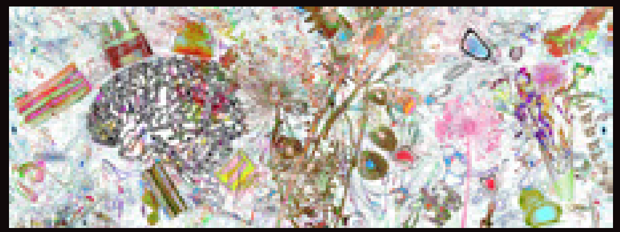
Born 1819, Lumberville, PA, USA; died 1904, St Augustine, FL, USA
Oil and pencil on canvas
Crystal Bridges Museum of American Art, Bentonville, Arkansas
2007.205

Study of Three Magnolia Blossoms
c. 1883–88
Martin Johnson Heade

Born 1819, Lumberville, PA, USA; died 1904, St Augustine, FL, USA
Oil and pencil on canvas
Crystal Bridges Museum of American Art, Bentonville, Arkansas
2007.218

Cattleya Orchid, Two Hummingbirds and a Beetle
c. 1875–1890
Martin Johnson Heade

Born 1819, Lumberville, PA, USA; died 1904, St Augustine, FL, USA
Oil on canvas
Crystal Bridges Museum of American Art, Bentonville, Arkansas
2010.67



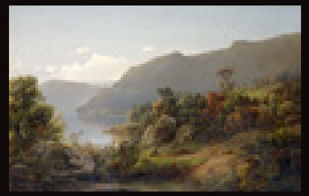
Who Says Your Feelings Have to Make Sense
2016
Aspassio Haronitaki

Born 1972, Athens, Greece; 1989–2013 in Paris, France; lives and works in Athens
Room installation: X-ray photographs on mirror and wallpaper

Four walls: 341.5 x 750.6 cm; 341.5 x 907.8 cm; 341.5 x 751.1 cm; 341.5 x 907.8 cm
Commissioned by Mona for *On the Origin of Art*
Courtesy of the artist

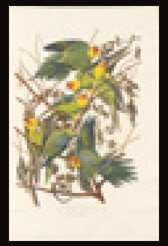
The Bath of Diana, Van Diemen's Land
1837
John Glover

Born 1767, Houghton-on-the-Hill, England; died 1849, Launceston, TAS, Australia
Oil on canvas
96.5 x 134.5 cm
National Gallery of Australia, Canberra
Purchased with the assistance of the National Gallery of Australia Foundation 1993
93.1777



Scene on the Hudson
c. 1864
William Sonntag

Born 1822, Pittsburgh, PA, USA; died 1900, New York, NY
Oil on canvas
91.7 x 142.9 cm
National Gallery of Victoria, Melbourne
Gift of John R. Richards, 1867
p.301.5-1



The Birds of America: From Original Drawings
1827–1838
John James Audubon

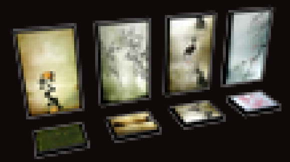
Born 1785, Les Cayes, Saint-Domingue (modern Haiti); died New York, NY, USA, 1851
Hand-coloured engraving and aquatint; Volume I from the set of four, comprising 435 plates
State Library of New South Wales, Sydney

Lobster
Japan, Meiji era (1868–1912)
c. 1880

Bronze
12.5 x 22.5 x 7.2 cm
Art Gallery of South Australia, Adelaide
Bequest of Sir Samuel Way 1916
AA272

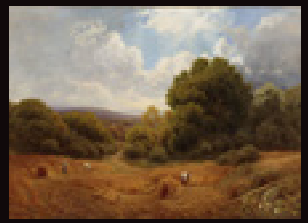
Crab
Japan, Meiji era (1868–1912)
c. 1880

Bronze
9.5 x 26 x 13.4 cm
Art Gallery of South Australia, Adelaide
Bequest of Sir Samuel Way 1916
AA270



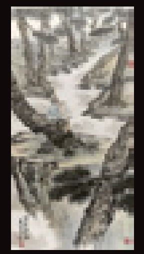
Beyond the Frame
2006
Lin Jiun-Ting

Born 1970 in Taiwan, Republic of China, where he lives and works
Interactive multimedia installation
Dimensions variable
Mona
2006.070



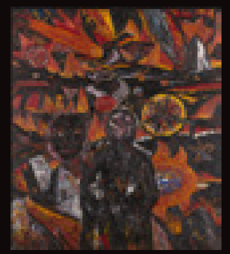
The Wheat Field
1876
John Clayton Adams

Born 1840, London, England; died 1906, Ewhurst Hill, near Guildford, England
Oil on canvas
127.5 x 183.3 cm
Ballarat Art Gallery
Purchased 1887
1887.7



Playing flute in a pine forest, the joy of quietude
2000
Kim Hoa Tram

Born 1959, Saigon, Vietnam; lives and works in Melbourne, Australia
Ink and coloured pigments on paper, silk, lacquered wood
137.7 x 69.4 cm
National Gallery of Victoria, Melbourne
2001.585



Painting
1977
Peter Booth

Born 1940, Sheffield, England; lives and works in Melbourne, Australia
Oil on canvas
213 x 182.5 cm
Mona
2005.030

Untitled 1994/95
1994–95
Bill Henson

Born 1955, Melbourne, Australia, where he lives and works
Type C photograph, adhesive tape, pins, glassine
244.3 x 278.8 cm
Art Gallery of New South Wales, Sydney
Contemporary Collection Benefactors 1996
221.1996

LIST OF WORKS

Amphora: The Woodhouse amphora
Cyprus, Cypro-Archaic I, 750–600 BCE

Bichrome IV ceramic ware (fired clay)
The Nicholson Museum, University of Sydney
Donated by Mrs Woodhouse 1937
NM46.36

Shell necklace
Oaxaca, Mexico, Mixtec, Early Post-Classic, 900–1200 CE

Shell, turquoise, thread
33.8 x 24.6 x 3.2 cm, variable
National Gallery of Victoria, Melbourne
Presented anonymously, 1980
PC190-1980

Shell necklace
1995
Val Macsween

Born 1919, Cape Barren Island, TAS, Australia; died 1999, Launceston, TAS
Toothies, black crows, maireeners (*Phasianotrochus irisodontes*)
string
Length 186 cm
National Gallery of Australia, Canberra
Purchased 1998
98.137

Shell necklace
2015
Lola Greeno

Born 1946, Cape Barren Island, TAS, Australia; lives and works in Launceston, TAS
Penguin shells and black crows, string
Length 94 cm
Commissioned by Mona for *On the Origin of Art*
Mona
2015.068

Tōkaidō Hodogaya
(Hodogaya on the Tōkaidō)
from the series 'Thirty-six Views of Mount Fuji'
c. 1830–32
Katsushika Hokusai

Born 1760, Edo, Japan; died 1849 in Edo (Tokyo)
Colour woodblock print
26 x 37 cm
Collection of the Dunedin Public Art Gallery
Given 1982 by Mary, Dora and Esmond de Beer through the National Art Collections Fund, London
78-1982

Woody the Dalmatian
1965
Ron James

Born 1937, Charlevoix, MI, USA; died 2013, Monterey, CA, USA
Silver gelatin photograph, first published in Life Magazine, 19 February 1965
Dimensions TBC approx 8 x 10 ins
Courtesy of the artist's estate

Remember
1964
Bridget Riley

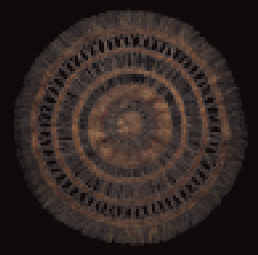
Born 1931, London, England; lives and works in London, Cornwall, and the Vaucluse, France
Emulsion on board
106.7 x 111.1 cm
Kerry Stokes Collection, Perth
1996.010

Shell necklace
2015
Lola Greeno

Born 1946, Cape Barren Island, TAS, Australia; lives and works in Launceston, TAS
Rice shells, small maireeners (*Phasianotrochus irisodontes*), oat shells and cat's teeth, string
Length 90 cm
Commissioned by Mona for *On the Origin of Art*
Mona
2015.069

Collecting basket
2015–16
Audrey Frost

Born 1948, Cape Barren Island, TAS, Australia; lives and works in Launceston, TAS
Coastal sword sedge (*Lepidosperma gladiatum*)
40 x 23 cm
Commissioned for *On the Origin of Art*
Mona
2015.070



Woven mat
1994
Audrey Frost

Born 1948, Cape Barren Island, TAS, Australia; lives and works in Launceston, TAS
New Zealand flax (*Phormium*)
1 x 143 x 144 cm
Courtesy of the artist

Shell necklace
2015
Lola Greeno

Born 1946, Cape Barren Island, TAS, Australia; lives and works in Launceston, TAS
Bungana (king) maireeners (*Phasianotrochus irisodontes*) on stainless steel, human hair clasp
Length cm
Private collection

Shell necklace
1995
Lola Greeno

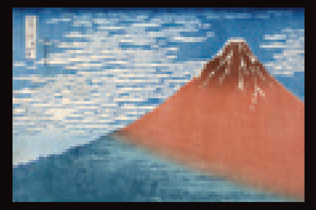
Born 1946, Cape Barren Island, TAS, Australia; lives and works Launceston
Cockles, maireeners (*Phasianotrochus irisodontes*), cat's teeth, and button shells, string
Length 136 cm
National Gallery of Australia, Canberra
Purchased 1998
98.138

Butterfly masks
Burkina Faso, West Africa, Bwa people, 20th century

Wood, pigment
54 x 240 cm
Mona
1999.013; 1999.014

Letter Rack
c. 1698
Edwaert Collier

Born 1642, Breda, Netherlands; died 1708, London, England
Oil on canvas
Art Gallery of South Australia, Adelaide
Gift of James & Diana Ramsay and the James & Diana Ramsay Fund through the Art Gallery of South Australia Foundation 1991
909P23



Gaifu Kaisei (Fuji in Fair Weather) from the series 'Thirty-six Views of Mount Fuji'
c. 1830–32
Katsushika Hokusai

Born 1760, Edo, Japan; died 1849 in Edo (Tokyo)
woodblock print
24.2 x 36.5 cm
Art Gallery of South Australia, Adelaide
South Australian Government Grant 1976
768G84