

3

A Cognitive Account  
of Aesthetics

Francis Steen

The study of aesthetics within an evolutionary framework has focused on the appetite for beauty as an engine for driving adaptive behavior in habitat and mate choice. In this chapter, I propose instead that aesthetic experience is its own goal, in the sense that the experience implicitly provides adaptively useful information utilized for purposes of self-construction.

At the cognitive roots of art is a subjective phenomenology of aesthetic enjoyment. Private and intimate, or ostentatiously public, such feelings constitute, on the one hand, a centrally gratifying dimension of being alive, and, on the other, a mystery, a gift without a card. To the project of reimagining and reconstructing the full depth of human history, of situating our current cognitive proclivities and capabilities within a renewed narrative of human origins, the phenomenon of aesthetics presents a crucial and delicate challenge. Current work in evolutionary theory is animated by the seductive promise of a functional explanation for every key human trait. Yet the variety and complexity of the aesthetic impulse, along with its myriad expressions, may make us conclude, very sensibly, that reality simply overflows our theories.

Nevertheless, I submit wholeheartedly to this seduction, with the caveat that a functional analysis of aesthetic enjoyment must be shifted into a new dimension. The field of evolutionary aesthetics (for an overview, see Voland and Grammar 2003) has principally

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focused on landscape preferences as a function of adaptations for habitat choice and the experience of human beauty as part of mate selection. While these perspectives are not unsupported by credible evidence, they leave out vast tracts of aesthetic experience—from neolithic symbolic art to what Robert Hughes (1991) called “the shock of the new,” from the frivolous to the sublime. What evolutionary aesthetics has so far failed to provide is a credible framework for understanding the surprising range of aesthetics. Just as significantly, the implicit underlying assumption that aesthetic pleasure is comparable to the pleasures of sex and food in driving adaptive behavior (Orians and Heerwagen 1992, 555) is clearly false: the subjective phenomenology of aesthetic enjoyment differs qualitatively from desire. In contrast to hunger and lust, the experience of beauty is prototypically its own reward; unlike these, it does not find its release, fulfillment, and satiation in possession. To the extent that this is so, we must look for an explanation that honors beauty itself as a resource, without seeing it as a proxy for something else.

In the following, I argue that the aesthetic impulse and experience is an appetite for certain types of information—in a word, that beauty is a kind of truth. I take my cue from John Keats’s “Ode on a Grecian Urn,” which famously and rather fatuously proclaims that beauty is the only kind of truth we have or need. My claim is both more modest and in some ways more far-reaching: while beauty is certainly not the only kind of truth we need, we appear to use it for a most intimate and crucial task, that of constructing ourselves. Not to skimp on the complex subjective phenomenology involved in this process, let us turn for a moment to the poet’s animated description before I elaborate.

In the first stanza of “Ode on a Grecian Urn,” the speaker addresses the artifact as a “sylvan historian,” praising its skillful telling of a “flowery tale.” Although urns, as everyone knows, don’t talk—Keats obliquely acknowledges this by calling it “foster-child of silence”—the object can be used to convey a story through images. The scenes depicted on its exterior are understood as snapshots of a fictive or historical narrative, the details of which the onlooker may attempt to infer: “What mad pursuit? What struggle to escape?” In this narrative, the characters portrayed have both a past and a future. To understand the scenes as adding up to a story, the onlooker must see them as iconic representations of entities whose existence is independent of the urn itself, illustrations of events to be filled in by memory and imagination. In Kozyski’s explanation (1933), they are no more to be confused with the events themselves than a map with the territory.

In the second stanza, however, this is no longer true. Here, the poet immerses himself imaginatively in the depicted scenes, pretending that the

bas-relief marble figures are in fact real human beings in a state of permanently suspended animation, yet with a fully intact consciousness, including perceptions, emotions, and intentions. In a surprising attempt to console them, he informs them about the peculiar nature of their situation, of which he assumes they are unaware:

Bold Lover, never, never canst thou kiss,  
 Though winning near the goal—yet, do not grieve;  
 She cannot fade, though thou hast not thy bliss,  
 For ever wilt thou love, and she be fair! (Keats 1820)

In this perspective, the world imaginatively reconstructed on the basis of the artwork on the urn exists only on the urn itself. No longer depictions of independently existing events, each of the scenes is now perceived as a mini-world of its own, subjectively as real for its inhabitants as ours is for us. Keats highlights what he sees as the salient feature that distinguishes this reconstructed world from our world: it is uniquely characterized by the absence of time. So implausible is this conceit that no attempt is made to explain how a whole community and its natural environment ended up in a waking and blissful but otherwise cryogenic state in the permanent exhibition of the British Museum. Somehow, and we are not invited to contemplate how, the people in the story have become trapped by their representation—life has transformed into art.

In the third stanza, the poet argues that this artistic and imagined world is preferable to our own. In the real world, “breathing human passion” leaves people in pain, either through deprivation or surfeit; in contrast, in the world on the urn, there is “More happy love! more happy, happy love!” By removing time, art achieves an uninterrupted and unvarying delight. It may be countered that art objects are just as subject to change over time as are other objects, people, and events, and that it is only in the imagination that the depicted worlds are frozen in time. In his description of the urn, the poet is blurring the vital distinction between what is constructed as it were out of whole cloth on the basis of memories, supplemented by some curiously shaped marble, and what originates in a genuine perception of reality.

If the poet is committing a category mistake, however, he does so knowingly and on purpose. In order to construct and contemplate the rich possibilities of an artistic, fictive world, it appears to be necessary to dedicate our working-memory capacities to this task, unburdened by the challenges of reality. Retracing his steps, Keats unwinds the fancy, performs a controlled retreat from the depicted world, and resumes his address to the urn itself in the last stanza. He praises it for its capacity to “tease us out of thought”—the implication being that beauty is strongly experienced as its own reward and

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## 60 ART AND EMOTION

that the mind is inherently attracted to it, to the point that it will temporarily set aside its own engagement with reality in favor of the aesthetic and imaginatively enhanced worlds of art. Finally, handing the microphone to the urn, the poet imagines that the urn itself formulates its enduring meaning and significance to future generations:

“Beauty is truth, truth beauty,”—that is all  
Ye know on earth, and all ye need to know. (Keats 1820)

The claim is clearly exorbitant, even if we make allowances for the speaker’s being an urn. Coming on the heels of a sequence of imaginative projections and self-evident counterfactuals, the artistic object’s claim to referential truth is weak. If beauty is truth, what kind of truth is it? In the following, I provide a strong if partial defense, situating the poet’s intuition of the importance of aesthetics within a cognitive and evolutionary framework.

### Natural Aesthetics: An Appetite for Beauty

In order to accomplish the complex task of constructing a functioning brain, the information contained in the genes does not suffice. While important target values appear to be genetically specified, the paths taken to reach them are not (Turner 1996, 25). For this, the organism depends on information that is reliably present in the environment. We can think of the genes as a series of switches activated by an orderly progression of environmental conditions, starting with the sheltering and nurturing enclosure of the womb. The power of the genome to determine the development of the organism is wholly subject to the structure of the environment in which it finds itself. Natural selection operates on functional outcomes; these are joint products of the complex order of the environment and some additional genetic information. If the environment reliably contains the information required to construct the brain, natural selection can be expected to favor mechanisms that effectively access this information.

In many cases, the information required is ubiquitous. A famous series of experiments showed that cats raised in an environment without vertical lines failed to develop the capacity to perceive them (Stryker et al. 1978; Tieman and Hirsch 1982). In the long course of mammalian evolutionary history, there was never an environment that lacked vertical lines. During critical periods of development, infant cats from snow leopards to jungle jaguars have been able to tacitly count on the recurring presence of vertical lines around them. Over tens of millions of years, the inability of feline genes to provide the infor-

mation necessary to build a brain that perceives vertical lines in the temporary absence of such lines has had no functional consequences, and has therefore not been subject to deselection. Since the necessary information was an inherent and ubiquitous part of the structure of their environment, a relatively passive mechanism for accessing it would have sufficed.

In other cases, the information may be unevenly distributed and vary in quality. Here natural selection can be predicted to favor mechanisms that detect relevant quality differences and exhibit an active preference for features of the environment that present high-quality information. The information will in effect constitute a scarce resource to be monitored and sought out. When found, it can be absorbed and utilized by the brain to pattern a targeted function. The active case is what concerns us here, as this is where I propose to ground aesthetics.

Consider the recurring necessity of calibrating the embodied brain's perceptual systems. These are highly complex and sophisticated mechanisms, implemented in organic systems undergoing constant change and upheaval. Some of the work of the senses is dull and monotonous. Under these conditions, the system may rely on certain features of the environment for recalibrating itself. It may be important, for instance, to obtain reliable information about baseline values as well as a rich sense of the full range of sensory phenomena the system is designed to handle. As long as all this information is reliably present in the natural environment, even if it is scattered in time and space, natural selection can be predicted not to favor potentially expensive mutations that engineer it into the genome. In this sense, it is more like food than gravity or vertical lines: reliably present, but requiring an active search, discriminating capacities, and a set of preferences expressed as appetite.

It is in this territory, then, that I propose to locate the phenomenon of aesthetics. In general terms, the suggestion is that our attraction to beautiful objects and events, and our experience of aesthetic enjoyment, may coherently be understood as the results of a biological need to locate certain types of information in our environments, as a supplement to genetic information, for the purpose of constructing and maintaining our own order. More narrowly, the prototypical function of aesthetics is to bring our senses back to life, or to an optimal state. In this sense, it constitutes an ancient evolutionary solution to the problem of calibrating various components of our multidimensional sensory systems. Natural selection, according to this model, has produced a set of adaptations designed to search the environment for certain types of information, and to engage in activities that will make this information

salient. We can be predicted to show an active preference for a class of features of the environment—namely, those that in evolutionary history our ancestors were able to rely on to supply information complementing that supplied by the genome. The aesthetic impulse would be an appetite for information that in our distant past was recruited and relied on for optimal self-construction, regulated by a developmental chronology.

I'm not suggesting we know we're doing this. If aesthetics is an evolved mechanism for constructing and maintaining complex patterns of order in the brain, it does not advertise itself as such. We do not seek out aesthetic experiences as the result of a conscious and deliberate intention to reach a specific goal; in fact, the distal cause of aesthetics is cognitively impenetrable. In order to gather the necessary structuring information, the conscious mind does not need a conceptual model of the distal purpose and function of aesthetics, nor does it need access to the complex internal logic of the operation of this function, any more than it needs access to the intricate nanotechnology of digestion in order for digestion to occur. The biological function of aesthetics is complex in principle and execution, and from the standpoint of selection, there is nothing to be gained and much to be lost by clogging up the limited bandwidth and processing capacities of the conscious mind. What is made available to consciousness is a phenomenology of aesthetics that is experienced as an end in itself and inherently motivating, an experience that is rich and delightful, confirming the exquisite order of the world and indeed our place within it. Inversely, under conditions when our senses for long periods are deprived of an aesthetic order, we experience a palpable dissatisfaction with the quality of our sensory environment, a nagging and aversive sense of boredom, and a longing for change.

Is this a credible theory of aesthetics? I should note here that my aim is not to construct an all-encompassing theory; as Prigogine and Stengers (1984, 1) note, reality always overflows our descriptions of it. Aesthetics is a delicate and subtle cognitive event, and these qualities, I suggest, reflect back on the complex and fluid organic order that forms and sustains a human being. The social and cultural uses of aesthetics presuppose rather than negate a biologically grounded explanation. If it had not existed, surely the phenomenon would have been unimaginable: all culture can do is tap into the capacity, in endless variations. While aesthetic preferences themselves vary, for reasons I explore below, the presence of art in all documented cultures, past and present, indicates that the phenomenon itself is universal (cf. Brown 1991). The purpose of an adaptationist account of aesthetics, then, is not to reduce a complex phenomenon to a simple one, but to gain genuine insight into its complexity.

This is a trivializing view of aesthetics only if we view the order of the universe as trivial. Primary aesthetic events and objects include the vast silence of the stars at night, the brilliant play of colors in the clouds at sunset, tumbling and crashing waters, the complex fluid dynamics of a rushing river, birds' songs, the delicate shape and coloring of flowers and leaves, a bare tree, the shape and movement of a healthy animal. Our evolved aesthetics has to be a natural aesthetics, responding to an order that is reliably present rather than to one that is manufactured. Prototypically beautiful natural events are characterized by a dynamic and ordered complexity, or by evidence of what we might term a generative order (Bohm and Peat 1984). By this I mean that we experience the complexity of beauty as a complexity that emerges in an orderly manner through the operation of an underlying generative process; for instance, a waterfall is continuously generated by gravity acting on water in motion, the slowly changing pink hue of the clouds at sunset is generated by the gradually changing refraction of the light from the setting sun, and the delicate leaf is produced by a patterned order of growth. The aesthetic response appears to pick out these dynamic processes and the intrinsic delight of aesthetics appears to stem from an appreciation of the inferred but invisible underlying order that generates the manifest phenomenon. The present proposal is that we unconsciously make use of such complex natural orders in wiring the brain and calibrating our perceptual systems, that our self-construction relies on them, and that natural selection has constructed a motivational system that leads us to seek them out.

As long as it is embedded in nature, a society might not feel the need to celebrate the beauty of its environment explicitly. In the West, it was the large-scale industrialization and urbanization of the eighteenth and nineteenth centuries that spurred an interest in the importance of natural aesthetics. The poet William Wordsworth became a primary spokesman in England for this growing cultural movement. In "Lines Written a Few Miles above Tintern Abbey, on Revisiting the Banks of the Wye during a Tour. July 13, 1798," looking back on his childhood, he contemplates the impact the sheer sensory experience of nature had on his formation as an individual. He emphasizes that he experienced a wide range of natural forms as enjoyable and meaningful in themselves, a passion and an appetite that did not rely on any conscious purpose or perceived utility. "For nature then," he writes,

To me was all in all.—I cannot paint  
 What then I was. The sounding cataract  
 Haunted me like a passion: the tall rock,  
 The mountain, and the deep and gloomy wood,

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## 64 ART AND EMOTION

Their colours and their forms, were then to me  
 An appetite; a feeling and a love,  
 That had no need of a remoter charm,  
 By thought supplied, or any interest  
 Unborrowed from the eye. (Wordsworth 1798, 76–84)

In “Tintern Abbey,” Wordsworth provides a particularly rich account of the phenomenology of the experience of natural aesthetics. He describes the mental state involved as distinct and characteristic, as deepening and intensifying through a sequence of stages orchestrated by emotions, and culminating in a suspension of the body similar to sleep, in which the mind perceives a profound truth:

—that serene and blessed mood,  
 In which the affections gently lead us on,  
 Until, the breath of this corporeal frame,  
 And even the motion of our human blood  
 Almost suspended, we are laid asleep  
 In body, and become a living soul:  
 While with an eye made quiet by the power  
 Of harmony, and the deep power of joy,  
 We see into the life of things. (Wordsworth 1798, 41–49)

Truth, in this case, is “the life of things”: a hidden and generative order that is the target of the aesthetic faculty and that delivers a climactic and perfect satisfaction to the appetite for beauty.

## Imagination and the Virtual Agent

By focusing on the dynamics of natural aesthetics, I have attempted to sketch a model of how our appetite for beauty may have a basis in biology, as an aspect of an adaptation that dates back millions of years. This model, however, does little to account for the truth claims made for art, understood as the objects and events that we design and manufacture for their aesthetic effects. Natural forms and events actually take place, and an insight into their underlying generative order, if accurate, carries a credible claim to an interesting kind of truth. Yet the cognitive processes that animate Keats’s “Ode on a Grecian Urn” appear to be qualitatively different from those at work in Wordsworth’s sensory rhapsody, dealing as they do with imaginary situations that we have no reason to believe are in any exact sense historical, and



centrally involving the wholly implausible claim of a transformation of inanimate depictions into conscious agents. Who needs a notion of falsehood if this is truth?

To get a handle on what is going on here, let us consider some simpler examples of the same phenomenon. The elementary guiding principle of artistic creation is to trigger a controlled series of sensations that awaken an aesthetic response. This definition is less vacuous and circular than it might seem: the detailed characteristics of our aesthetic response system are unknown to us, but in the making of art, it can be systematically probed. At the same time, the proposed adaptive design of the aesthetic response engine is to detect and acquire information in the environment that is not present in the genes or in its own structure, for the purpose of wiring the brain. This means that through art, an individual cannot only acquire a certain type of self-knowledge about his own aesthetic preferences, but also use the art itself to propose new orders. These new orders can then be selectively incorporated into his own perceptual system, in effect teaching him to perceive and sense the world in new ways.

As long as these orders tap into the adaptive design of our aesthetic response system, they need not replicate natural aesthetics. Adaptive design is by necessity a product of particular if usually prolonged historical circumstances, and gets constructed within the context of a certain environment because it solves a present problem. Any adaptation will have a built-in slack—areas where it may function in interesting and potentially useful ways even though it was not designed to do so (for a discussion, see, e.g., Sperber 1996). By proposing new perceptual orders, artists tap into both the core and the unused fringe capacities of the aesthetic response system to explore complex sensory orders that have no precedent in nature.

Experiments have shown that, when provided with the means, nonhuman animals are capable of formulating and carrying out the intention of creating aesthetic objects. The lowland gorilla Koko, whose work featured prominently in a primate art show at the Terrain Gallery in San Francisco in December and January 1997–98, uses broad strokes of primary colors to achieve a remarkably lively and complex aesthetic effect. (See <http://theartfulmind.stanford.edu> for an example of this work.)

I leave open the possibility that much of the distinctive effect is due to the human scaffolding: the laying out of the canvas and the paint, the focused encouragement, the choice of the moment of completion, and of course the selection of canvases to exhibit. Moreover, I find it intriguing to contemplate the difference it makes for my appreciation of the painting to consider the mind of the creator. Are these lines clumsy strokes that arbitrarily criss-cross and

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fortuitously suggest a complex order, or are they the intended results of a delicately sensitive mind, sharply aware of the subtle play of form and color? In the former case, it would be misleading to call this art—or to put it differently, the artistic act should be attributed to their human friends and handlers rather than to the gorillas themselves. A distinctive feature of art as communication is that at some link in the chain must be the act of declaring something to be an aesthetic artifact. Treating Koko's paintings as art carries with it the necessary implication that gorillas have a sense of aesthetics.

In fact, the anecdotal evidence strongly suggests that our closest simian relatives have an independent and self-motivated urge to create art, and that this enjoyment drives and orders their activities toward end results that humans have no difficulty relating to as art, even high-quality art. Desmond Morris (1962) reported in the early 1960s that chimpanzees would get so absorbed by their painting that they forwent food, evidently finding the activity inherently enjoyable. When they were systematically given a reward for each painting, however, their work would degenerate to a minimal smear as their motivation shifted to obtaining the reward. This suggests that the animals have aesthetic response systems very similar to ours, that they experience aesthetic pleasure, and that, just like us, they are capable of targeting this aesthetic pleasure through their own exploratory and original creations in ways that are unprecedented in their natural history.

Koko's work is not obviously figurative, but the paintings are given titles that suggest a subject (for example, one is titled "Bird"), based on signs exchanged with humans at the time of painting. Representational art relies on a complex suite of cognitive adaptations, some of which are clearly present in apes. The gradual development of the capacities required to make sense of images can also be observed in infants.

I sometimes read picture books with a friend; younger than two years, she likes to point at various items she is familiar with and name them. The items, of course, are depictions and not the objects themselves; they are two-dimensional, stylized, small, and feature-poor versions of the actual things she names. In order to utilize the affordances of the depictions of hats and balls and to interpret them as iconic, rather than as colored blots on a piece of paper, she must activate her personal memories of these objects, memories that are laced with emotions and motor activity. "Ball!" she exclaims with passion, likely the same passion she feels for the real object. In her mind, there is a simulation of a ball—or more conservatively, a simulated response to a ball—and it is this simulation that constitutes the act of understanding the image. This act of making sense of an iconic depiction is very similar to the act of pretense: it involves the reinterpretation of perceptual input based on a

counterfactual scenario, one in which there is a hat (for a more detailed treatment, see Steen 2005).

It may appear excessive to invoke the notion of simulation to explain something as elementary as understanding a picture. After all, pictures of hats and balls look like hats and balls; why should it be any harder to understand one than the other? The point here is that since images are not what they represent, it is not adequate to respond to them as if they were. Understanding a picture is not a matter of making a mistake, of momentarily confusing pictures of hats with hats, and then realizing that you missed the mark. At the same time, understanding a picture of a hat involves precisely something very like this type of confusion: it requires activating the response system that handles real hats. Only by activating the appropriate target response system will the picture of a hat make sense to you as a hat. In less paradoxical terms, understanding the picture of a hat requires that your brain respond to it as if it were a hat, but that it simultaneously track the fact that it is just a picture. In this sense, the picture prompts a simulated response—a response that duplicates key features of the real experience, but lacks its real consequences.

In this view, the act of responding to an image is an act of pretense. It requires that you set up a distinct mental space in consciousness to handle the perceptual input of the image as well as the output of the target response system. While the cognitive machinery of pretense can be utilized for executive purposes such as symbolic communication and planning, it seems likely that the capacity to pretend first evolved to enable behavioral simulations such as chase play and play fighting—that is to say, to solve problems related to self-construction (Steen and Owens 2001). As such, pretense represents one of the central cognitive innovations of the organizational mode. It is designed to solve a particularly complex adaptive problem—that of improving performance on a task in the absence of the normal eliciting conditions. Pretense allows the young mammal or child to make use of affordances in its environment to devise learning situations that are safe, readily available, and developmentally appropriate. This amounts to saying that natural selection acts on the organizational mode to elaborate what might be termed an evolved pedagogy. We can thus make sense of the developmentally and contextually calibrated boredom and thrill of play as motivational and regulatory mechanisms designed to optimize the kind of learning that benefited our ancestors in the environment of evolutionary adaptedness.

In representational art, aesthetics and play join forces. When we engage with an artistic representation, such as Keats's Grecian urn, the mental spaces created are neither precisely counterfactual (they are not primarily contrasted

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with a real state of affairs) nor hypothetical (they are not primarily formulations of a possible state of things). Rather, they are defined in a deliberately playful manner to optimize the conditions for self-construction. A striking feature of this optimization is the creation of virtual agents, which permit an intense and likely extremely effective first-person learning.

Consider the situation when you encounter real human beings. You know they see you and that what you do will make a difference. In order to act coherently, you need to track who you are and what your goals are as well as your available resources and possible obstacles. These elements constitute what we may term your agent memories. When you encounter a human being in a piece of representational art, you realize that there is no need to respond to him or her—the person isn't there; it's just a picture. She cannot see you, and you are not called upon to act. In this case, what do you do?

First, you may lower your defenses and enter an aesthetic frame of mind; this may play a role in the effective implicit information gathering. Because you do not need to respond, you may set your own agent memories aside—an act that frees you from worrying about the real problems in your life. In this way, the aesthetic attraction and imaginative possibilities of the object tease you out of thought, to use Keats's expression. Second, you may use your imagination to fill in the blanks, to attempt to reconstruct a past and a future that fit the cues provided. In doing this, you are in effect constructing a model of the fictive agents in the representation, attributing to them a social and biological identity, a goal, and a set of resources and obstacles relating to reaching this goal. This act of reconstruction creates a complete set of agent memories—wholly fictive, of course, and attributed to the individuals depicted. In the third stage, you may swing your wand and undergo yourself a temporary transformation into the person represented, handled either as a personal identification or as an imaginative projection. You do this by, as it were, writing your own agent memories to disk and reading in the fictive ones you constructed in stage two, thus becoming a virtual agent. By creating a virtual agent, you are able to enter the fictive scenario and contemplate from a first-person perspective the full experience presented in the representation.

This virtual agent allows the pretending individual to use fiction to access and to explore the vast space of possible human action. Human beings are not born with operating manuals, and the competitive nature of social and natural reality means that there will always be a premium on new and original strategies of action. Discovering the small subset of useful strategies among the vast number of possible actions is a nontrivial problem, especially in domains where the cost of an attempt is high and the tolerance for failure low. In pretense, we can explore this abstract and unmanifest but nevertheless real

phase space of human thought, feeling, and action in a manner that is safe and sheltered from real consequences, and we can do so at a negligible cost. Great representational art, in this perspective, provides a set of affordances that allow us to open up this phase space in new and original ways, suited to our local individual and cultural conditions.

## Conclusion

If we agree to use the term *beauty* for whatever qualities it is that attract us to aesthetic objects and events, we can now return to the question raised by Keats's ode: what kind of truth is beauty? In the first approximation, this model of natural aesthetics suggests that beauty can meaningfully be thought of as an important type of truth. Referential truth makes a claim about a systematic relation between an external manifest and an internal symbolic order; in natural aesthetics, there is no symbolic order. Instead, aesthetic truth makes an even more basic claim: that there is a significant and systematic relation between certain orders that are externally manifest and the internal manifest order of certain aspects of our being. The truth of beauty, in this view, is that particular subset of truths that we are designed to feel inclined to seek out and enjoy as an end in themselves, and that are relied on by the organism and by natural selection for the purpose of constructing and maintaining our own order.

In the second approximation, the truth of beauty encompasses the use of imaginative immersion and the creation of virtual agents in representational art. In this case, beauty's claim to truth is more diffuse. It is centered in the proposition that the set of actions, thoughts, and feelings—modes of relating to the world—that are possible but not yet manifest or realized constitute a genuine and important truth. It has supreme practical value, for it is in this state space that new strategies can be found. Art provides us with the occasion and some of the tools to explore this possibility space in ways that are cheap, safe, and effective.

Both of these types of truth—the aesthetic and the imaginative—are precarious. It is not the case, pace Keats, that aesthetics and the imagination are the only kinds of truth we have or the only kind we need. This matters, as they are not infallible paths to truth. First, the processes of natural selection that have endowed us with these admittedly very powerful modes of acquiring truth are effective only with regard to truths that have persisted and mattered for survival for very long periods, and even then only to some pragmatic degree of approximation. Second, cultural innovations in the arts rely in part

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on deliberately exploiting the slack in our adaptive machinery; in these cases, the truths we discover, if any, can be chalked up to our own account. Third, the fact that the real work of beauty takes place in large part below the horizon of conscious awareness, but according to principles that can be at least in part discovered, creates a situation where the instinctive conviction that beauty is truth lends itself to manipulation for political and other purposes. Finally, according to the present argument, the very design of aesthetics and imaginative play is to explore a vast phase space of human action, much of which has not been realized and thus cannot have been acted on by natural selection. In brief, we are on our own. Beauty is a profound guide to a kind of truth we might term “existential”: if it has a referent, it is the order that unites us with the cosmos.

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