

The Adaptive Function of the Arts

Alternative Evolutionary Hypotheses

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I. Massive Modularity vs. Cognitive Flexibility

Evolutionists insist that genes constrain and direct human behavior. Cultural constructivists counter that culture, embodied in the arts, shapes human experience. Both these claims are true, but some evolutionists and some cultural constructivists have mistakenly regarded them as mutually exclusive (cf. Wilson 2007, pp. 20–37). Some evolutionists have either ignored the arts or tried to explain them away as epiphenomenal to the basic processes of life. Many cultural constructivists, in contrast, have sought to collapse biology into culture, eliminating “human nature” and thus turning culture into a first cause or unmoved mover. In the past few years, evolutionists in both the sciences and the humanities have broken through this impasse, arguing that the imagination is a functional part of the adapted mind. These new ideas revise an earlier model of human cognitive evolution – a model most closely associated with the earliest phase of “evolutionary psychology” (EP) as a specific school within the evolutionary human sciences. Revising that model makes it possible for us now to fully integrate the evolutionary human sciences and the study of the arts.

In the early phases of EP, theorists seeking to counter the concept of the mind as a “blank slate” committed themselves to the idea of “massive modularity,” the idea that the mind operates almost exclusively through dedicated bits of neural machinery adapted to solve specific practical problems in ancestral environments (I shall refer to this conception of the mind as “narrow-school EP”). Cognitive modules – the neural machinery dedicated to sight, for example – are characterized by automaticity and efficiency. To account for cognitive flexibility in this scheme, one could only “bundle larger numbers of specialized mechanisms together so that in aggregate, rather than individually, they address a larger range of problems.” (Tooby and Cosmides 1992, p. 113). The idea of massive modularity overgeneralizes from the most hard-wired components of the brain, and it has been effectively criticized from a broader evolutionary perspective (cf. Geary 2005; MacDonald 1990; Sterelny 2003). Its residual influence makes

itself felt, though, in the ongoing debate over the adaptive function of the arts (cf. Boyd 2005; Carroll 2008a, pp. 119–128; Carroll 2008b, pp. 349–354; Dissanayake 2007).

The massively modular model of the human mind is integrally connected to the idea of an ecologically stable, homogeneous environment. Modules emerge only against strong regularities persisting over time – regularities like those in the physics of light and three-dimensional space to which the human eye has adapted:

The structure of the environment causes corresponding adaptive organization to accumulate in the design of the organism. ... For example, the design of eyes reflects the properties of light, objects, and surfaces; the design of milk reflects the dietary requirements of infants (and what was dietarily available to mothers); the design of claws reflects things such as the properties of prey animals, the strength of predator limbs, and the task of capture and dismemberment. This functional organization in the organism – its set of adaptations – is designed to exploit the enduring properties of the environment in which it evolved (termed its environment of evolutionary adaptedness, or EEA) and to solve the recurring problems posed by that environment. (Tooby and Cosmides 1992, p. 69)

By committing itself to massive modularity, narrow-school EP thus also, necessarily, committed itself to the view that modern humans still possess a stone-age mind. “In relating the design of mechanisms of the mind to the task demands posed by the world, ‘the world’ means the Pleistocene world of hunter-gatherers.” (Cosmides et al. 1992, p. 5). The Pleistocene was a period of exceptionally severe ecological instability (cf. Potts 1996; Wade 2006). In the narrow-school EP conception of human cognitive evolution, that instability was not itself an adaptively relevant feature of the Pleistocene environment. “It is only those conditions that recur, statistically, accumulating across many generations that lead to the construction of complex adaptations.” (Tooby and Cosmides 1992, p. 69). There is no allowance for an evolutionary trajectory in which the human mind acquires cognitive adaptations specifically designed for responding with flexible inventiveness to ecological instability (cf. Potts 1996; Sterelny 2003, pp. 177–210). From the theoretical perspective adopted in “The Psychological Foundations of Culture,” cognitive flexibility can emerge only from the accumulation of automatic neural processes or “modules,” and each of those modules can arise only as the product of environmental features so constant that they can be relied on as absolutely as the rising and setting of the sun – the basis for the evolution of the eye.

In *How the Mind Works*, Steven Pinker locates the arts within a narrow-school EP conception of human cognitive evolution (cf. Pinker 1997, pp. 524–543). As he sees it, natural selection shaped human motives to maximize inclusive fitness within a hunter-gatherer ecology. Sociality and language were part of the human adaptive repertory. Imaginative culture was not. Creative imagination, whenever it appeared in human evolution,

was just added on as a by-product of the cognitive / behavioral mechanisms that solved practical problems. To illustrate the by-product idea, Pinker draws parallels between art and pornography, psychoactive drugs, and rich foods like cheesecake. He acknowledges that fictional narratives might have informational content of some utility in providing game-plans for practical problems that could arise. All the other features of the arts, he suggests, reflect only the human capacity to exploit evolved mechanisms for producing pleasure. This sort of pleasure, detached from all practical value with respect to survival and reproduction, would be equivalent to the pleasure derived from masturbation.

Edward O. Wilson offers a vision of human cognitive evolution very different from that exemplified in Pinker's view of the arts. In *Consilience: The Unity of Knowledge*, Wilson poses the same question posed by Pinker:

If the arts are steered by inborn rules of mental development, they are end products not just of conventional history but also of genetic evolution. The question remains: Were the genetic guides mere byproducts – epiphenomena – of that evolution, or were they adaptations that directly improved survival and reproduction? And if adaptations, what exactly were the advantages conferred? (Wilson 1998, p. 224)

Wilson's answer to this question draws a decisive line between the mental powers of humans and other animals. Other animals are "instinct-driven." Humans are not. "The most distinctive qualities of the human species are extremely high intelligence, language, culture, and reliance on long-term contracts." The adaptive value of high intelligence is that it provides the means for behavioral flexibility – for generating plans based on mental representations of complex relationships, engaging in collective enterprises requiring shared mental representations, and thus producing novel solutions to adaptive problems. Behavioral flexibility has made of the human species the most successful alpha predator of all time, but achieving dominance in this way has come with a cost. Wilson speaks of the "psychological exile" of the species. To the modern human mind, alone among all minds in the animal kingdom, the world does not present itself as a series of rigidly defined stimuli releasing a narrow repertory of stereotyped behaviors. It presents itself as a vast and potentially perplexing array of percepts, inferences, causal relations, contingent possibilities, analogies, contrasts, and hierarchical conceptual structures. The human mind is free to organize the elements of cognition in an infinitely diverse array of combinatorial possibilities. And most of those potential forms of organization, like most major mutations, would be fatal. Freedom is the key to human success, and it is also an invitation to disaster. This is the insight that governs Wilson's explanation for the adaptive function of the arts. "There was not enough time for human heredity to cope with the vastness of new contingent possibilities revealed by high intelligence. ... The arts filled the gap." (Wilson 1998, pp. 224f.). If instincts are defined as stereotyped programs of behavior released automatically by environmental stimuli, we can

say that in humans the arts partially take the place of instinct. Along with religion, ideology, and other emotionally charged belief systems, the arts form an imaginative interface between complex mental structures, genetically transmitted behavioral dispositions, and behavior. The arts provide images of the world and of human behavior that are not merely conceptual but affectively valenced. Humans do not operate automatically, but neither do they operate on the basis of purely rational deliberations about means and ends. They are motivated by emotions (cf. Damasio 1994), but they also regulate their behavior in accordance with beliefs and values that are made vividly present to them in the depictions of art, including fictional narratives. People inhabit worlds created in their imagination. The images of art feed into the imagination and thus help people to direct their behavior.

High human intelligence is part of a larger, systemic structure of species-typical adaptations that can be analyzed under the rubric of “human life-history theory,” that is, the analysis of the distribution of effort across the human life cycle (cf. Flinn et al. 2005, pp. 10–46; Kaplan et al. 2000, pp. 156–185). Human life history includes altricial birth, extended childhood, male-female bonding coupled with male coalitions, dual parenting, post-menopausal survival, longevity, the development of skills for the extraction of high-quality resources, an enlarged neocortex that enhances powers for suppressing impulses and engaging in long-term planning, symbolic capacities enabling identification with extended social groups (“tribal instincts”), egalitarian dispositions operating in tension with conserved dispositions for individual dominance, and the power to subordinate, in some degree, impulses of survival and reproduction to the formal dictates of imagined virtual worlds (cf. Baumeister 2005; Boehm 1999; Geary 2005; Hawkins and Blakeslee 2004; Richerson and Boyd 2005; Wilson 2007).

The narrow-school EP conception of the mind supposes a sequence in which automatic cognitive processes evolved to solve adaptive problems specific to Pleistocene ecology, with the arts tacked on as side effects. The alternative vision formulated by Wilson supposes that human cognitive capacities evolved specifically for the purposes of generating adaptive flexibility.¹ In that alternative evolutionary scenario, dispositions to produce and consume works of imagination co-evolved in functional interdependence with high intelligence. The affective neuroscientists Jules and Jaak Panksepp

1 Also see Joseph Carroll, “The Human Revolution and the Adaptive Function of Literature,” in: *Philosophy and Literature* 30 (2006), pp. 33–49; Robert Foley, “The Adaptive Legacy of Human Evolution: A Search for the Environment of Evolutionary Adaptedness,” in: *Evolutionary Anthropology* 4 (2005), pp. 194–203; William Irons, “Adaptively Relevant Environments versus the Environment of Evolutionary Adaptedness,” in: *Evolutionary Anthropology* 6 (1998), pp. 194–204; Steven Mithen, *The Prehistory of the Mind: The Cognitive Origins of Art, Religion, and Science*, London: Thames and Hudson, 1996; cf. also Potts 1996; Sterelny 2003; Wade 2006.

vividly evoke this vision of an integrated, systemic evolution of human cognitive powers:

What those vast cerebral expansions that emerged during the Pleistocene probably provided was a vast symbolic capacity that enabled foresight, hindsight, and the brain-power to peer into other minds and to entertain alternate courses of action, thereby allowing humans to create the cultures that dominate our modern world ... What makes humans unique, perhaps more than anything else, is that we are a linguistically adept story-telling species. That is why so many different forms of mythology have captivated our cultural imaginations since the dawn of recorded history. (Panksepp and Panksepp 2000, pp. 126f.)

We are a linguistically adept story-telling species because telling stories is one of the chief ways we give shape to our experience and thus ultimately direct our behavior. As Terrence Deacon puts it, "We tell stories about our real experiences and invent stories about imagined ones, and we even make use of these stories to organize our lives. In a real sense, we live our lives in this shared virtual world." (Deacon 1997, p. 22).

II. Gene-Culture Co-Evolution

Dispositions for creating and enjoying art form part of the larger evolutionary process known as "gene-culture co-evolution." "Culture" includes technology and social organization as well as art, religion, and philosophy. Conceiving culture in this broader sense, evolutionary anthropologists often cite lactose tolerance as an instance of gene-culture co-evolution (cf. Cochran and Harpending 2009; Richerson and Boyd 2005; Wade 2006). Through natural selection, herding peoples have evolved enzymes that enable adults to digest milk. The cultural practice of keeping cattle serves as a selective force that alters the gene pool in a given population, and in turn the altered gene pool encourages the expansion of a pastoral economy. Language offers another clear instance of this kind of selective pressure. At some point in the ancestral past, humans had no power of speech. Mutations enabling rudimentary forms of "proto-language" would have given some selective advantage to those who possessed them (cf. Bickerton 1992; Bickerton 2000; Bickerton 2002; Mellars 1996). That advantage would have increased the representation of those genes in the population at large, and the increase in those genes would have enhanced the linguistic character of the cultural environment, intensifying the selective advantage conferred by genes promoting the use of language.

A similar logic applies to imaginative culture. Developing the power of creating imaginative virtual worlds must have had adaptive value for our ancestors. Otherwise, capacities for imaginative culture would not now be human universals; artistic behavior would not spontaneously appear in all normally developing children; and humans would not display cognitive

aptitudes specifically geared toward the production and reception of art – dispositions, for instance, for organizing pitched sounds in rhythmically and emotionally expressive sequences, for constructing visual designs that produce distinct moods and states of contemplative attention, and for constructing fictional narratives that generate excited, empathic responses in audiences. (cf. Boyd 2009; Brown 1991; Dissanayake 2000; Dutton 2009; Scalise-Sugiyama 2005; Tooby and Cosmides 2001; Salmon and Symons 2004). These three factors – universality, reliable spontaneous development, and dedicated cognitive aptitudes – all suggest that dispositions for the arts were adaptive. If that is in fact the case, dispositions for producing and consuming the arts would have served as a selective force on the population, altering the gene pool, favoring those genes that facilitate producing and consuming works of art.

Somewhere between 100,000 and 40,000 years ago, there was a transformation in human culture that anthropologists designate “the Human Revolution” (cf. Carroll 2006; Cochran and Harpending 2009; Klein and Elgar 2002; Mithen 1996; Mithen 2001; Wade 2006; Mellars 1996; Mellars et al. 2007; Mellars and Stringer 1989). Archeologically preserved forms of imaginative culture – art, decoration, ceremonial burial – appeared for the first time, and along with them, complex multi-part tools, sewn clothing, and extended forms of trade, implying more complex forms of social organization. In *The Prehistory of the Mind* (1996), Steven Mithen forcibly drew attention to the magnitude of this transformation and used it as evidence against the narrow-school EP conception of the massively modular mind. Countering the theory that cognitive flexibility arises from the multiplication of modules, all working automatically in response to regularities in the ancestral environment, he argued that the Human Revolution was generated by a genetically based cognitive transformation, a mutation involving language, that gave humans a vastly expanded flexibility in symbolic representation. His concept of “cognitive fluidity” is essentially a concept of metaphor: the power of linking images and ideas across diverse domains. To that power he attributes the sudden efflorescence of technological innovation and artistic production that characterizes the Human Revolution. Other theorists have argued for a more gradual evolution of human cognitive capacities (cf. Deacon 1997; Henshilwood and Marean 2003; McBrearty and Brooks 2000; Smail 2008; Sterelny 2003). I think the advocates of the Human Revolution will ultimately have the better part in this argument. In any case, at whatever pace it came about, there can be little doubt that modern symbolic culture – the culture of the past 100,000 years – differs in radical ways from the culture of the early and middle phases of hominid evolution.

The very existence of modern symbolic culture runs counter to the narrow-school EP conception of human cognitive evolution – to massive modularity and the massively homogeneous character of the ancestral environ-

ment. Hence the virtual necessity, for acolytes of narrow-school EP, to explain away modern symbolic culture, treating it as merely a side-effect to the adaptive structures that solved challenges supposed constant throughout the whole of the Pleistocene.

“Human nature” means that humans share species-typical dispositions: basic motives tied closely to the needs of survival, mating, parenting, and social interaction (cf. Carroll 2008a, pp. 111ff.; Flinn et al. 2005; Kaplan et al. 2000). Cognitive and behavioral flexibility are part of human nature, but they have not eliminated the underlying regularities in basic motives. In different ecologies and different forms of social organization, the elements of human nature combine in distinctive ways, but “culture” cannot build structures out of nothing. It must work with the genetically transmitted dispositions of an evolved and adapted human nature. The arts give imaginative shape to the experiences possible within any given culture, reflecting its tensions, conflicts, and satisfactions. One chief aim for evolutionary studies in the humanities is to analyze the way any given culture organizes the elements of human nature, evaluate the aesthetic, emotional, and moral qualities inherent in that organization, and probe the way it influences – by conformist pressure or antagonistic stimulus – specific works of literature.

III. A Modified EP Model for the Arts

In “The Psychological Foundations of Culture” (1992), Tooby and Cosmides formulate ideas on human cognitive evolution essentially concordant with Steven Pinker’s, and indeed, Pinker acknowledges that Tooby and Cosmides are the primary theoretical inspirations for his views on how the mind works. In “Does Beauty Build Adapted Minds?” (2001), Tooby and Cosmides formulate a theory of art that accords poorly with the vision of human cognitive evolution in “The Psychological Foundations of Culture.” Like E. O. Wilson, they speak of an “exploding universe of contingent information” that “created a vastly expanded risk of possible misapplications.” (Tooby and Cosmides 2001, p. 19). They take Hamlet as an exemplar for “the struggle for coherence and sanity amidst radical uncertainty.” Though hardly concordant with their earlier formulations on massive modularity, this vision of human cognitive experience displays serious limitations deriving from those earlier and still active formulations. The differences between the two visions are never fully reconciled, or even recognized. Despite these problems, the theory of the arts in “Does Beauty Build Adapted Minds?” makes substantial contributions to the gradually emerging consensus on the adaptive function of the arts.

Tooby and Cosmides explain that they had once regarded the arts as an evolutionary by-product but have become dissatisfied with that explanation.

They give several reasons for their dissatisfaction: (a) involvement in fictional, imagined worlds is a human universal; (b) the arts are intrinsically rewarding; (c) fictional worlds engage emotions while detaching the actions that are usually prompted by emotions; and (d) humans have evolved specialized cognitive machinery for participating in imagined worlds (cf. Tooby and Cosmides 2001, pp. 7ff.). They conclude, “We think that the human mind is permeated by an additional layer of adaptations that were selected to involve humans in aesthetic experiences and imagined worlds”. This additional layer serves to organize other adaptations. Narrative representations, they argue, “have a powerfully organizing effect on our neurocognitive adaptations.” (Tooby and Cosmides 2001, pp. 11, 21; Dutton 2009, p. 106).

This theory of art is hard to reconcile with the idea of the massively modular mind, itself necessarily linked with the idea of a massively stable EEA – that part of the environment relevant to the evolution of cognitive modules, and thus, from the EP perspective, an environment necessarily consisting in statistical regularities transcending radical fluctuations in climate and ecology. The theory of art formulated by Tooby and Cosmides is broader than their general conception of human cognitive evolution, but their theory of art has two limitations that can be linked with that more general conception: focusing art too narrowly on matters of practical concern, and leaving symbolic activity out of the list of basic human motives.

Tooby and Cosmides take account of fictionality or “representations that are not literally true.” (Tooby and Cosmides 2001, p. 21). Their sense of “neurocognitive adaptations” is nonetheless closer to Pinker’s vision of the mind than to Wilson’s. In their view, mechanisms for “decoupling” a representation from an actual referent in the immediate environment have adaptive utility because “activities that organize an adaptation can be liberated from the constraints of having to encounter and practice the actual task.” The focus on “the actual task” runs parallel with Pinker’s idea that we use fiction for practicing game-plan scenarios to solve practical problems we might face in the real world. Fiction no doubt has some utility in this respect, but that utility does not get to the heart of the matter. The heart of the matter is that art fulfills an adaptive function by helping organize our total world view; it does not just give a final polish to “neurocognitive adaptations” geared toward fulfilling specific tasks that regularly recurred in a Pleistocene environment. Wilson’s theory of the adaptive function of the arts takes in the larger sense of what it means to “organize” our minds. The theory formulated by Tooby and Cosmides, like that formulated by Pinker, seems to remain fixed on the smaller, more narrow sense of “neurocognitive adaptations.”

Tooby and Cosmides envision art as focusing the mind on adaptively relevant problems – mating, acquiring food or status, parenting, and other

basic human motives (cf. Tooby and Cosmides 2001, p. 7). Art enables us “to feel our way more foresightfully to adaptively better choices.” (p. 23). I concur in this emphasis on basic human motives. I think basic motives are basic subjects for art. Still, one can concentrate on the basic motives humans share with their primate cousins and still not take adequate account of the way capacities for modern symbolic culture have fundamentally altered the economy of basic motives in human nature (cf. Boehm 1999; Boyd 2009; Dissanayake 2000; Klein and Elgar 2002; Mithen 1996; Wade 2006).

If it is true that the arts are adaptively functional, they would be motivated as emotionally driven needs. The need to produce and consume imaginative artifacts would be as real and distinct a need as hunger, sexual desire, maternal and filial bonding, or the desire for social contact. Like all such needs, it would bear within itself, as its motivating mechanism, the pleasure and satisfaction that attend upon the fulfilling of desire. That kind of fulfillment would not be a parasitic by-product of some other form of pleasure, nor merely a means for fulfilling some other kind of need – sexual, social, or practical. Like all forms of fulfillment, the need for art could be integrated with other needs in any number of ways. It could be used for sexual display or the gratifications of sexual hunger or social vanity, and it could be used as a medium for social bonding. Nonetheless, in itself it would be a primary and irreducible human need.

Failing to register that imaginative impulses have themselves become basic motives in human nature would almost necessarily mean overlooking self-reflexivity in art. An EP conception of the adaptive function of the arts cannot give an adequate account of art that takes as its subject matter the peculiar fascinations of the imagination itself – for instance, *A Midsummer Night's Dream* and *The Tempest*; creative essays such as Dryden's *Of Dramatic Poesy*, Pope's “An Essay on Criticism,” and Wordsworth's preface to the *Lyrical Ballads*; much of the poetry of Keats, Yeats, and Stevens; and in fiction those characters who personify features of imagination – for instance, Becky Sharp in *Vanity Fair*; the major characters in *The Picture of Dorian Gray*; Elizabeth-Jane in *The Mayor of Casterbridge*, and in *Middlemarch* Dorothea, Lydgate, Mary Garth, and Will Ladislaw. A theory of art that does not take account of the imagination as a subject of representation would find it difficult to register the symbolic import of the many scenes in canonical British novels in which abused or neglected children take refuge in the imaginary worlds created by books. In retreating into books, David Copperfield, Esther Summerson (in *Bleak House*), and Jane Eyre, for instance, are not just preparing themselves to respond more adaptively to future challenges such as finding food and selecting mates; they are organizing their minds and developing their personalities relative to a world of healthy human possibility. They are using their imaginations to create a world that is richer, more gen-

erous, and more complete than the psychologically impoverished environments in which they happen to live.

Despite these important limitations in the theory of art formulated by Tooby and Cosmides, their concept of “organizing adaptations” gives access to a criterion for making evaluative distinctions among literary representations. Weighing the alternative explanations presented by Pinker and by Tooby and Cosmides, Catherine Salmon and Donald Symons give credence to both and suggest a way that these alternative causal hypotheses can be used in judgments of literary quality:

Written fiction probably contains elements of both engagement of organizing adaptations and of pleasure circuit lock-picking, and different kinds of fiction may contain different proportions. Perhaps ‘great’ works of fiction are those that most fully engage organizing adaptations, which is why they have survived the tests of time and translation, while ‘lesser’ fiction, including genre romance novels, may primarily pick the locks of the brain’s pleasure circuits. (Salmon and Symons 2004, p. 95)

Salmon and Symons argue convincingly that Romance novels appeal to female mating fantasies and that pornography appeals to male mating fantasies. Pinker’s concept of the arts as evolutionary by-products accords most closely with genres like romance and pornography that simply activate pleasurable fantasies. It accords least closely with genres like tragedy that engage painful emotions but leave us feeling that we have a deeper and more adequate understanding of the forces that drive human experience.

IV. Making Sense of the Arts

To formulate plausible and testable hypotheses about the adaptive function of the arts, we have to satisfy three criteria: (a) define the arts in a way that identifies what is peculiar and essential to them – thus isolating the behavioral disposition in question; (b) identify the adaptive problem this behavioral disposition would have solved in ancestral environments; and (c) identify design features that would efficiently have mediated this solution (cf. Pinker 2007). We can define art as the disposition for creating artifacts that are emotionally charged and aesthetically shaped in such a way that they evoke or depict subjective, qualitative sensations, images, or ideas. Literature, specifically, produces subjectively modulated images of the world and of our experience in the world. The disposition for creating such images would have solved an adaptive problem that, like art itself, is unique for the human species: organizing motivational systems disconnected from the immediate promptings of instinct. The design features that mediate this adaptive function are the capacities for producing artistic constructs such as narrative and verse and emotionally modulated musical and visual patterns.

Consider the reality of our experience. We live in the imagination. For us, humans, no action or event is ever just itself. It is always a component in

mental representations of the natural and social order, extending over time. All our actions take place within imaginative structures that include our vision of the world and our place in the world – our internal conflicts and concerns, our relations to other people, our relations to nature, and our relations to whatever spiritual forces we imagine might exist. We live in communities that consist not just of the people with whom we come directly into contact but with memories of the dead, traditions of our ancestors, our sense of connection with generations yet unborn, and with every person, living or dead, who joins with us in imaginative structures – social, ideological, religious, or philosophical – that subordinate our individual selves to some collective body. Our sense of our selves derives from our myths and artistic traditions, from the stories we tell, the songs we sing, and the visual images that surround us.

We have all had moments in which some song, story, or play, some film, piece of music, or painting, has transfigured our vision of the world, broadened our minds, deepened our emotional understanding, or given us new insight into human experience. Working out from this common observation to a hypothesis about the adaptive function of literature requires no great speculative leap. Literature and the other arts help us live our lives. That is why the arts are human universals (cf. Brown 1991). In all known cultures, the arts enter profoundly into normal childhood development, connect individuals to their culture, and help people get oriented to the world, emotionally, morally, and conceptually (cf. Boyd 2009; Carroll 2004, pp. 65ff.; Johnson et al. 2008; Dissanayake 2000; Dutton 2009; Tooby and Cosmides 2001).

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