

# Not So Exceptional: Away from Chomskian Saltationism and Towards a Naturally Gradual Account of Mindfulness

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**Abstract** It is argued that a chief obstacle to a naturalistic explanation of the origins of mind is human exceptionalism, as exemplified in the seventeenth century by René Descartes and in the twentieth century by Noam Chomsky. As an antidote to human exceptionalism, we turn to the account of aesthetic judgment in Charles Darwin’s *Descent of Man*, according to which the mental capacities of humans differ from those of lower animals only in degree, and not in kind. Thoroughgoing naturalistic explanation of these capacities is made easier by shifting away from the substance-metaphysical implications of the search for an account of *mind*, toward a dispositional account of the origins of *mindfulness*.

## 1 Introduction

The term ‘naturalism’ has been variously used and misused. For most purposes, the provisional definition proposed by Owen Flanagan et al. will serve well enough, enshrining naturalism as “a view of the world, and of man’s relation to it, in which only the operation of natural (as opposed to supernatural or spiritual) laws and forces is admitted or assumed” (Flanagan et al. 2007, 1).<sup>1</sup> But of course this definition simply offloads any ambiguity in ‘naturalism’ onto ‘natural’. In the spirit of David Hume’s “Of Miracles” (1999, 169–186), we prefer to take naturalism as a methodological “no-miracles” principle. On this principle, we must assume that, for the most part, things do not happen without antecedent. In the absence of some compelling reason to think otherwise, every event or process in the world must be assumed to have an explanation consistent with the natural order of things. When novelty arises,

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<sup>1</sup> We are grateful to Jared Kinggard for alerting us to this text. See Kinggard (2010).

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as it occasionally does, novel processes and events must be assumed (again, in the absence of compelling evidence to the contrary) to have antecedents. Nothing arises *ex nihilo*.

This chapter sets out from this same assumption, applied specifically to the origins of mind. Let us suppose that there was a time in the distant past when the universe was devoid of minds, whereas now it is replete with them. When and how did minds come about, and what were their antecedents? A similar question can also fruitfully be posed about any *particular* mind, viz., when and how did *my* mind come about, and what were *its* antecedents? Both questions concern the origins of mind, though on very different timescales. Events on the geological and evolutionary timescales of the first question must set the boundary conditions for addressing the second. Both timescales have been the subject of fruitful philosophical intervention, as has the intersection between the two (see e.g., various contributions to Oyama et al. 2003).

In this chapter, we are specifically concerned with the origins of mind on the evolutionary or geological timescale, as opposed to the historical or developmental. We begin by discussing two related problems that an account of the evolution of mind must overcome: human exceptionalism and dogmatic saltationism. In overcoming these problems, we are guided by the work of Charles Darwin (1859, 2004). Darwin was careful to avoid both of these problems. Like Darwin in the *Descent of Man*, we will focus on the origin of one particular aspect of what organisms with minds are disposed to do—to make aesthetic judgments. Judgment begins with discrimination, the capacity to respond differentially, not to different stimuli so much as to different interactive environments. Whereas stimuli only require a one-way interaction, in which a subject responds not differentially but passively to some causal influence, interactive environments require a two-way interaction between an organism and its environment, which may include other organisms. At some point along what Robert Campbell and Mark Bickhard (1986) call the “macroevolutionary sequence” in the emergence of cognition, this capacity gives rise to what we will call, for lack of a better phrase, *mindfulness*: the organism’s further capacity to partition the space of its possible interactive environments and to enact preferences for some potential environments over others (see Levine 2011). For this reason, our discussion will have more to do with the origins of mindfulness than the origins of minds, traditionally conceived.

The diverse implementations of this capacity for aesthetic judgment across the animal kingdom evince numerous differences in degree across multiple dimensions. The macroevolutionary emergence of aesthetic judgment is thus likely to provide a story of the emergence and accumulation of such differences in degree. Such a story challenges deeply held convictions about the uniqueness of human mindfulness. Whatever the merits of these convictions, we argue they have nothing to do with the evolutionary origins of the human mind. In studying the latter, we are drawn to the continuity between human judgment and mindfulness and the capacities of all organisms capable of differentiating and choosing among potential interactive environments.

## 2 Human Exceptionalism

A standard early modern exemplar of human exceptionalism is the work of René Descartes. Descartes was a pioneer in the naturalistic explanation of many elements of human and animal cognition and perception, formulating mechanistic hypotheses on numerous aspects of human and animal anatomy, physiology, and behavior. Yet, notoriously, he was inclined to resist any analogous explanation of human thought and language. “What brings it about that beasts do not speak,” he asserted, “is that they have no thought, and not that they lack the organs for it” (Descartes 2000, 276).<sup>2</sup> Though human eyes are structurally and doubtless functionally similar to bovine eyes, human minds are fundamentally different from bovine minds (if cattle can be said to have minds at all). For someone like Descartes, humans are thus partially removed from nature, and the origins of human minds are removed from the natural order of things. To be fair, it should be noted that the question of the origins of mind or mindfulness did not exist for Descartes in the sense in which it presents itself to us now.

In the contemporary context, advocates of human exceptionalism typically at least attempt to evoke naturalism. A good example is Noam Chomsky, for whom

...there is surely no reason today for taking seriously a position that attributes a complex human achievement entirely to months (or at most years) of experience, rather than to millions of years of evolution or to principles of neural organization that may be even more deeply grounded in physical law—a position that would, furthermore, yield the conclusion that man is, apparently, unique among animals in the way in which he acquires knowledge. Such a position is particularly implausible with regard to language.... (Chomsky 1965, 59)

The position that Chomsky is rejecting, which he elsewhere (Chomsky 2009) calls “empiricism,” in contradistinction to his own aptly named “Cartesian linguistics,” treats a human infant’s first language acquisition as a learning process in which general-purpose rules are applied to data. Empiricism fails, Chomsky argues, to account for the rapidity and efficiency of nearly all human language acquisition, especially given the “poverty of the stimulus” the infant has at his or her disposal.

The merits of his arguments need not concern us here. What is of interest is the surprising, or at any rate ironic fact that “the conclusion that man is, apparently, unique among animals in the way in which he acquires knowledge” also falls neatly out of the Chomskian view that Generative Grammar is innate to humans and only humans. In his recent introduction to the third edition of *Cartesian Linguistics*,

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<sup>2</sup> We are grateful to Christine Wieseler for alerting us to the source of this observation, a letter by Descartes to the Marquis of Newcastle, November 23, 1646. Later in the same text Descartes allows, “if they [animals] thought as we do, they would have an immortal soul as we do” (Descartes 2000, 277). But this conclusion is unacceptable if one aims to provide a purely naturalistic explanation.

James McGilvray acknowledges the Chomskian commitment to a kind of human exceptionalism.

If much of the mental machinery needed to develop concepts and their combinatory principles is innate and one is going to try to explain how it comes to be in the mind at birth, it won't do to say that God put it there (Descartes) or to construct myths of reincarnation (Plato). The only course open to us is to look to biology and those other natural sciences that can say what an infant human begins with at birth and how what s/he is born with develops. And taking that tack also makes it possible to at least begin to speak to the question of how human beings came to have apparently unique machinery in the first place—to address the issue of evolution. (Chomsky 2009, 18)

The project McGilvray has articulated at first appears to have an eminently naturalistic aim, that of providing a biological explanation of “how human beings came to have apparently unique machinery in the first place.” But thus articulated, the project does not offer any support for the uniqueness of human machinery beyond its brute apparentness.

Such an assumption requires justification. To be sure, the animal kingdom is diverse, with the members of every taxon in the Linnean hierarchy exhibiting all sorts of morphological and physiological differences from members of other taxa. But while it is surely true (and trivially so) that only humans speak human language,<sup>3</sup> this does not make the cognitive machinery subtending this fact unique in any especially interesting sense. Alone among Ursids, the Panda possesses an enlarged metacarpal (the Panda's “thumb”; Gould 1992) that allows it to grasp stalks of bamboo; yet this appendage is clearly a *metacarpal*, homologous with every other mammalian metacarpal. Thanks in part to Chomsky, there is a widespread conviction that, as Steven Pinker puts it,

The discrete combinatorial system called “grammar” makes human language infinite (there is no limit to the number of complex words or sentences in a language), digital (this infinity is achieved by rearranging discrete elements in particular orders and combinations, not by varying some signal along a continuum like the mercury in a thermometer), and compositional (each of the infinite combinations has a different meaning predictable from the meanings of its parts and the rules and principles arranging them). (Pinker 2007, 342)

Inquiring with the requisite degree of care into whether human language actually has all three of these features, and if so, whether they (severally or jointly) are *unique* to human language, would go well beyond the scope of this chapter. Our point here is that the uniqueness of human language thus described is not *self-evident*. As Andy Clark has argued (1992), our willingness to take this uniqueness as given is surely in part an artifact of our experience with *written* language, which clearly involves the explicit, quasi-recursive manipulation of discrete symbol tokens. But by our best estimates, written language is no more than 6,000 years old. This would suggest that written language arose much later than the onset of anatomically

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<sup>3</sup> This ignores, for the moment, the many fascinating attempts to teach such languages to nonhumans, of which arguably the most successful have involved not primates, but *birds* (see Pepperberg 2002).

modern humans (c. 200,000 years ago). For this reason, written language is better understood as a product of historical or cultural achievement rather than of evolution. Whether, and to what degree, the capacity to become literate is subtended by the same evolved capacities that allow us to acquire spoken language (as opposed, say, to the evolved capacities that make us such prodigious tool users) ought to be an empirical question.

We have no basis for asserting that every variety of human exceptionalism need necessarily violate naturalist strictures. We also take it that the consistency of Chomskian linguistics with the data and theory of human evolution is, or ought to be, an empirical question.<sup>4</sup> But the claim that this approach “makes it possible to at least begin to speak to the question of how human beings came to have apparently unique machinery in the first place” is somewhat misleading. If it could be shown that the cognitive machinery of human language or concept acquisition was *not* unique, or at any rate, that it differed from the machinery available to our nonhuman relatives only in degree, and not in kind, then the task of naturalistic explanation would be enormously simplified. Conversely, by committing himself to human uniqueness, or human exceptionalism, Chomsky has enormously complicated this same task. The resulting complications are especially troublesome when the naturalistic explanation of any biological structure or process requires some sort of evolutionary account. In constructing such an account, the human exceptionalist may be tempted toward *dogmatic saltationism*—to which we now turn.

### 3 Dogmatic Saltationism

Darwin was an evolutionary *gradualist*, convinced that on the whole the evolutionary process proceeded slowly by small increments. His corpus is replete with expositions of the gradualist doctrine; for our purposes, one classic example will suffice. Of “organs of extreme perfection,” such as the mammalian eye, Darwin reasons:

...if numerous gradations from a perfect and complex eye to one very imperfect and simple, each grade being useful to its possessor, can be shown to exist; if further, the eye does vary ever so slightly, and the variations be inherited, which is certainly the case; and if any variation or modification in the organ be ever useful to an animal under changing conditions of life, then the difficulty of believing that a perfect and complex eye could be formed by natural selection, though insuperable by our imagination, can hardly be considered real. (Darwin 1859, 186)

In *Descent of Man*, as we shall see, Darwin employed similar arguments in defense of the gradual evolution of human mental faculties. On the modern synthesis in evolutionary theory, still broadly Darwinian in its outlines, very rapid evolutionary

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<sup>4</sup> Though we have our doubts about whether it has been treated as an empirical question in the practice of comparative linguistics. If every time a new language is described that appears to violate one or another stricture of Generative Grammar, the community response is to tweak Generative Grammar to accommodate it, one begins to suspect a self-sealing argument.

change is possible when measured on the geological timescale. One way it can occur is by the “founder effect,” in which a small (and thus inevitably nonrepresentative) sample of a larger population becomes geographically isolated, and gives rise to a daughter population in which the distribution of traits diverges significantly from that in the ancestor population. Such possibilities are acknowledged in Stephen Gould and Niles Eldredge’s account of “punctuated equilibria” (Gould and Eldredge 1977). It must be conceded that these considerations lower the bar for an explanation of human exceptionalism consistent with evolutionary naturalism by allowing the possibility that unique human characters might have arisen suddenly (*saltationally*), but not miraculously.

They do not, however, entirely eliminate the difficulty. First of all, though Gould and Eldredge argue that speciation is often very fast, on the geological timescale, it does not occur overnight, at least not on the shorter “ecological” timescale (Gould and Eldredge 1977). In other words, speciation does not typically occur from one generation to the next.<sup>5</sup> Second, suppose that all of the species in a given clade, save one, lack a particular derived trait. The more complex the novel trait—the greater the number of evolutionary changes necessary to bring it about—the less likely it is to have arisen quickly in the ancestors of the outlier species. Conversely, while simpler derived traits are more likely to arise over shorter spans of geological time, the simpler a derived trait found in a particular species—the smaller the number of evolutionary changes necessary to bring it about—the more likely it is to arise independently in related taxa and to be found throughout the clade in question.

The human exceptionalist who wishes to explain human exceptionalism naturalistically thus faces a dilemma. This dilemma is illustrated by the fate of Generative Grammar in the decades since Chomsky (1965), a trajectory ably summarized by McGilvray. Initially,

...accommodating a theory of language to biology...looked daunting. It was particularly hard to understand how the human genome could be expected to contain all the information needed to allow for any of a large number of languages while providing too for a way to choose between them. Even the most optimistic account of language universals at the time...would still demand that the genome carry a massive amount of language-specific information, more than any plausible account of evolution could plausibly explain. (Chomsky 2009, 29)

Faced with this challenge, those toiling in the Chomskian fields sought to simplify their task.

Fortunately, in the years following the 1965 publication of *Aspects of the Theory of Syntax*, “Different languages came to look less and less different.” This insight led to the “minimalist program in the early 1990s,” until finally,

...very recently it has come to seem as if perhaps the sole ‘operation’ (rule, principle) needed to explain *both* basic structure and movement is what Chomsky and several others call “Merge.” Oversimplifying...Merge is an operation rather like concatenation, putting

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<sup>5</sup> Though it *can*—at least in plants, where allopolyploid speciation is possible. This occurs when a hybrid, which is capable of reproduction, is not capable of breeding with either of its parent species. See e.g., Soltis and Soltis (1989).

items or elements (lexical items) together and creating a new item...Something like that is surely needed for there to be language at all, for all languages ‘compose’—they make complexes called “sentences” out of “words.” (Chomsky 2009, 29)

Several observations are in order. First, if the innate endowment by virtue of which humans are capable of acquiring language is confined to an operation like “Merge,” then language acquisition has come to resemble the kind of learning process an empiricist might well endorse. (Concatenation is a general-purpose tool, after all.) But this is the very sort of position that Chomsky set out to reject.

Second, as noted above, if the emergence of the language faculty was made possible primarily by the evolution of a rudimentary cognitive capacity for concatenation or by the evolutionary refinement of a prior capacity, similar capacities would be likely to be found among our close nonhuman relatives. A simple change that can arise once can also arise more than once when given enough time. But this, too, undermines the uniqueness that Chomskians attribute to human cognition.

Third, it strikes us that the cognitive capacity for putting things together to form novel wholes *is* widespread among our close nonhuman relatives and we would not be surprised to find it widespread throughout much of the animal kingdom. To save human exceptionalism one would have to deny this—on pain of replacing human exceptionalism with mere human speciesism. This forces the human exceptionalist to take recourse to *dogmatic saltationism*:

...if...Merge alone is ‘contained’ in the genome, it becomes much easier...to explain how language could have come about as the result of a single mutation. It need not be a “language specific” mutation; it could, for example, be a side result...It must, though, be ‘saltational’—happen in a single jump—for otherwise we would have to suppose that language developed over millennia, and there is no evidence of that. (Chomsky 2009, 34)

McGilvray dates the “single jump” to between 200,000 and 50,000 years ago (between the advent of anatomically modern *H. sapiens* and the migration out of Africa), though not on any especially specific or persuasive grounds. Something more, however, needs to be provided to account for the development of language since other early hominins made it out of Africa for which we lack any evidence suggesting that they developed language.

Following evidence and arguments adduced by Richard Wrangham and others (Carmody and Wrangham 2009; Wrangham 2010), it strikes us as at least as likely that characteristically human language evolved in concert with cooking, perhaps as long as 1.9 million years ago and perhaps over a period of a several hundred thousand years. But were the assumption of evolutionary saltation to be dropped, Chomsky’s human exceptionalism would be left without any consistently naturalistic evolutionary ground. This is why we call it *dogmatic saltationism*.

A dogmatic gradualism would be just as bad. But as Darwin was at pains to argue in Ch. 3–5 of *The Descent of Man* (Darwin 2004), every one of the “mental powers” often cited as the sole province of humans may be found among other animals. If he is right, then at least with regard to these traits, gradualism is warranted. We now turn to discuss one of these powers that may at one time have been thought to belong only to humans, thereby further garnering support for gradualism.

## 4 Darwin on Aesthetic Judgment

Like such contemporaries as Max Müller, Darwin also had a fair bit to say about language. After considering and dismissing a number of ways in which the linguistic faculties of humans might have been said to differ from the communicative faculties of other animals, he concludes, “The lower animals differ from man solely in his almost infinitely larger power of associating together the most diversified sounds and ideas; and this obviously depends on the high development of his mental powers” (Darwin 2004, 107–108). The difference between the mental abilities of humans and nonhuman animals is one of degree, not kind. Language depends on the capacity for association (for Hume and other empiricists, the basis of all reasoning and learning), and while smarter animals form more diverse and complex associations, many animals are capable of forming simple associations, even for purposes of communication. For the remainder of this chapter, however, we focus on a faculty of the mind even more important to understanding its evolutionary origins: the capacity for aesthetic judgment. Communication arises only among social animals. But sociality, in turn, is the prerogative of animals that reproduce sexually. In their reproductive projects, many of them are assisted by aesthetic judgment.

Perhaps the most succinct statement of Darwin’s views on aesthetic judgment may be found in Ch. 3 of *The Descent of Man*:

*Sense of Beauty*—This sense has been declared to be peculiar to man. I refer here only to the pleasure given by certain colors, forms, and sounds, and which may fairly be called a sense of the beautiful...When we behold a male bird elaborately displaying his graceful plumes or splendid colors before the female, whilst other birds, not thus decorated, make no such display, it is impossible to doubt that she admires the beauty of her male partner. As women everywhere deck themselves with these plumes, the beauty of such ornaments cannot be disputed. (Darwin 2004, 114–115)

This passage, occurring in a chapter entitled “Comparison of the Mental Powers of Man and the Lower Animals,” is crucial to the whole project of Darwin’s book. With its first seven chapters devoted to similarities between humans and other animals, the next 11 to sexual selection in nonhuman animals, and the final two to sexual selection among humans, the conclusion that sexual selection was central to Darwin’s conception of “the descent of man” would be inescapable even to a reader content with only browsing the book’s table of contents. Aesthetic judgment, or the sense of beauty, is in turn a necessary condition for sexual selection anywhere in the animal kingdom.

## 5 Implications and Advantages

By focusing on the evolutionary origins of human mindfulness, specifically in regards to the capacity for aesthetic judgment as a necessary condition for sexual selection, we are better able to recognize the continuity between humans and

nonhuman animals. Since both humans and nonhuman animals formulate preferences that play a significant role in determining how they will respond to different interactive environments, including the selection of which environments they will respond to, both humans and nonhuman animals exhibit the capacity to partition the space of their possible interactive environments. Among the resources in these possible interactive environments are potential mates. For this reason, mate selection is itself an exhibition of mindfulness, and since aesthetic judgment is necessary for sexual judgment, it follows that there is a strong connection between aesthetic judgment and mindfulness.

In addition to recognizing the connection between aesthetic judgment and mindfulness to better understand the continuity between humans and nonhuman animals, a shift of the discussion of the origins of mind to the origins of mindfulness carries with it many benefits. The first of these has to do with the fact that the problematic character of the question concerning the *origins* of mind has its roots in discussions regarding the *nature* of mind. After all, one is tempted to say, understanding something's origin first requires understanding what that thing is. Discussions of the nature of mind, in turn, have typically focused on identifying the essence of mental *substance* (i.e., as material or immaterial). This approach, however, has fallen short of fulfilling the philosopher's expectations of an account of the nature of mind. We see this in Descartes' writings, in his attempt to explain how the immaterial mind can interact with the physical body. We also see this from the opposing end through attempts to account for how consciousness can arise from material substances (what David Chalmers has called the "Hard Problem"; Chalmers 1997). Without an adequate account of what the mind *is*, philosophers have not had the proper theoretical tools to begin pursuing the problem of the *origin* of mind. This has been a consequence of metaphysical presumptions that the mind is a substance in the first place, which has saddled the theorist with the task of resolving many untenable metaphysical debates for the sake of maintaining the initial presupposition. Rather than attempting to develop a strong metaphysics program around an initial assumption that seems to bring with it more problems than solutions, it may be advisable to recast the initial assumption.

In the case of shifting the focus of the origins of mind to the origins of mindfulness, we assume that the mind should be thought of in processual or dispositional, rather than substance, terms. We take mind to be the capacity to act in particular ways, but, as mentioned above, the term 'mind' is already loaded with substance-based terminology. For this reason, we prefer another term that highlights an organism's capacity for distinguishing among potential interactive environments. So, rather than thinking of mind in terms of something that an organism has, we take mind to be a description of an organism's interactive potential—the behaviors that an organism is disposed to exhibit. This shift from a substance-based view of mind to a dispositional view further highlights the additional benefits of moving the discussion of mind to one of mindfulness.

Specifically, a discussion of mindfulness of the kind we envision is not susceptible to the problems that arise with exceptionalist and saltationalist accounts.

To briefly review, mental exceptionalism is the view that the mental traits possessed by humans are different in kind from any found among nonhuman animals. As shown above, this view is problematic, since positing that humans possess any special trait different in kind from the traits that our nonhuman ancestors possess places a wedge in the naturalist explanations for our traits that evolutionary accounts provide. To suggest that humans possess any special mental trait, though, is to think of the mind in substance-based terms—in terms of Aristotelian essence. Shifting to the dispositional account of mind, in terms of what an organism has the capacity to do, allows us to recognize that the mental capacities exhibited by both humans and our nonhuman relatives exist on the same continuum. This removes the barrier that human exceptionalists place in the way of such naturalistic explanations as evolutionary theory affords.

Similarly, shifting to a dispositional account of mind overcomes the temptation toward saltationism. Since the discussion of mindfulness given here, especially regarding its connection to aesthetic judgment, highlights the continuum that exists between humans and nonhumans, there is no need to posit an account of sudden jumps in evolution to account for the differences in traits between humans and nonhumans. A further upshot for the dispositional account of mind is that rather than having to give up our account of mindfulness when presented with new biological evidence that further demonstrates that there may *not* have been such drastic jumps in the evolutionary chain as the saltationist insists, which would thereby force the saltationist to abandon some key features of her account, a proponent of mindfulness as discussed here would be able to use the new biological findings to further elucidate the continuum offered by the gradualist account of evolution. This is an outcome of the saltationist requiring gaps in the evolutionary story for her position to be tenable, whereas the gradualism endorsed by our dispositional account of mindfulness welcomes the filling in of these gaps.

We believe there is an additional benefit gained by shifting to a dispositional account of mind in considering how the concept of mindfulness avoids both mental exceptionalism and saltationism. In both cases, there is no need to appeal to anything like a miracle. In the case of the former, rather than believing that humans possess something exceptional beyond their nonhuman counterparts, which requires some additional evidence beyond the current biological data, the discussion of mindfulness allows us to see our abilities as having a similar developmental and evolutionary origin as other species that exhibit similar, although not exact, mental prowess. In the case of the latter, by understanding the differences between animals and nonhuman animals as one of gradation, there is no need to posit sudden developmental ruptures that do not have any antecedents. In other words, the account of mindfulness offered here allows us to offer antecedents for our capacities to differentiate and make judgments regarding potential interactive environments, thereby avoiding any appeals to miracles. For this reason, our account of mindfulness is consistent with naturalism.

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