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# The Evolution of Minds

by [William Carroll](#)

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Significant advances in evolutionary biology and the neurosciences have led many who are already committed to a materialist philosophy to offer sweeping accounts of the origin and development of life, from bacteria to the human mind and consciousness.

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Love it or hate it, phenomena like this [DNA] exhibit the heart of the power of the Darwinian idea. An impersonal, unreflective, robotic, mindless little scrap of molecular machinery is the ultimate basis of all agency, and hence meaning, and hence consciousness, in the universe.

So wrote Daniel Dennett about twenty years ago in [Darwin's Dangerous Idea: Evolution and the Meanings of Life](#). The connection between evolution and the neurosciences features prominently in [From Bacteria to Bach and Back](#), Dennett's new book, which offers a kind of master narrative to account for what, in his subtitle, he refers to as the "evolution of minds."

Dennett has made famous a distinction between "skyhooks" and "cranes" in accounts of the origin and development of living things. A skyhook "is a 'mind first' force or power or process, an exception to the principle [which Dennett takes as true] that all design, and apparent design, is ultimately the result of mindless, motiveless mechanistic." Skyhooks are imaginary bits of aeronautical folklore, magical devices for explaining things. Cranes, on the other hand, are really existing devices, firmly planted on the ground, that do real lifting and are made of materials known to exist. In other words, for Dennett, we need to explain all changes in the world (including the origin of life) in terms of "bottom-up" processes, firmly rooted in the material features of our world. If we are to be truly scientific we must avoid appeals to explanations in terms of skyhooks, which are examples of "top-down" causality that appeal to some kind of grand designer as the source of life and its development. For Dennett, human intelligent designers, who are "top-down" causal agents, are themselves the product of exclusively natural, "bottom-up" causality.

In telling the story of life's emergence and development, Dennett seeks "to expose and disarm" what he refers to as the "Cartesian Wound," the view that human beings have an immaterial soul or mind distinct from (yet united to) the body. One purpose in refuting Cartesian dualism is to take seriously a "scientific, materialist theory" of minds. Following the analysis of Wilfrid Sellars, Dennett distinguishes between a "manifest image" and a "scientific image" of nature. It is only in terms of the former that we have difficulties with notions of purpose, agency, mind, and consciousness. Ultimately, Dennett identifies free will and

consciousness as “user illusions,” themselves the products of evolutionary processes that a truly scientific account discloses. The “manifest image” is a special kind of artifact, the result of genetic and cultural processes, “a particularly effective user-illusion for helping . . . organisms move adroitly through life.”

Dennett thinks criticisms of materialism find their arguments only in versions of the dualism that must be exposed. As we shall see, there are other alternatives besides the choice between materialism and dualism. Traditional appeals to God and divine agency in the world ought not to be identified with the skyhooks that Dennett rejects.

### **Competence Without Comprehension**

Evolution by natural selection, Dennett affirms, is not itself a designed thing, is not an agent with purposes. It “mindlessly” uncovers “reasons without reasoners.” Nevertheless, natural selection results in processes that generate other processes that result in the ordered world in which we live: a cascade of generative processes. Darwin did not eliminate teleology; “he naturalized it.” He explained the processes of nature exclusively in terms of natural causation.

Dennett recognizes that the origins of life remain unresolved, yet he speculates about how to explain the transition from a lifeless world, “in which there are no reasons, no purposes at all, but processes that happen,” to living things: the joining together of bacteria and archaea (prokaryotes) by endosymbiosis (a crane and not a skyhook) to produce a eukaryotic cell, the key ingredient for making possible multicellular life forms. Prokaryotes and eukaryotes and all that has followed from them exhibit various abilities to interact with their environment. These abilities Dennett describes as competences without comprehension. “Evolution has endowed all living things with the wherewithal to respond appropriately” to their environments, “detecting and shunning the bad, detecting and obtaining the good, using the locally useful.”

Microorganisms, plants, and animals possess competences that enable them to function effectively in their respective environments. In a sense, we can speak of reasons for what they do, but these reasons Dennett calls “free-floating rationales,” as the organisms do not need to appreciate, comprehend, or even be conscious of them in order to benefit from them. Dennett offers examples of bacteria making themselves at home in familiar environments, each in its own *Umwelt*. It is also true for plants that organize their constituent cells to perform different functions (including photosynthesis) that support their existence.

A particular example that intrigues Dennett is the Australian termite castle, an elaborate structure with an eerie similarity to Antoni Gaudí’s famous church, La Sagrada Família in Barcelona. There are reasons for the termite castle’s being constructed the way it is, but no termite knows what they are; nor is there some Master Architect or intelligent designer of the termite castle. On the other hand, Gaudí had reasons for the construction of his church. But his reasons are themselves the result of elaborate evolutionary processes in which neurons, with no comprehension of their own, exhibited a competence that ultimately resulted in a human brain able to be a designer.

### **The Evolution of Comprehension**

When Dennett turns to human beings, he emphasizes the importance of the emergence of language and notes that, like the origins of life, this remains an unsolved riddle. He can only offer what he thinks is the best speculation. Human beings, like other animals, are the unwitting beneficiaries of evolved competences that did not require comprehension. He thinks that somehow the vocal talents of human ancestors developed through gradual, incremental evolutionary processes “into the verbal dexterity and prolixity of modern language users.” And it is language that sets the stage for the origin of comprehension and, with comprehension, the possibility of top-down causality: the arrival of intelligent designers.

Dennett employs Richard Dawkins’s idea of memes to claim that words are memes, culturally transmitted items that “evolve by differential replication—that is, by natural selection,” a kind of “memetic mutation.” They are the crucial features of cultural evolution. Our brains are nothing more than the arrangement of neurons, and these neurons do not comprehend what they are or do. Our manifest self-image speaks of our being conscious, but evolutionary biology and neuroscience show us that what we call consciousness is really an illusion, itself the result of evolutionary (including cultural evolutionary) processes that have their beginning deep in history. Over many eons, new processes have developed that served as “cranes” to produce more processes. One result has been the appearance of comprehending designers (human beings) of various artifacts. The most extraordinary of these artifacts, “deep-thinking” machines like IBM’s Watson, display “competence without comprehension;” hence, the “back” in the title of Dennett’s book.

Dennett is quick to note that “the cascade of cranes is not a miracle, not a gift from God, but a natural product of the fundamental evolutionary process.” Just as the eukaryotic cell came into existence in a symbiosis involving bacteria and archaea, so the comprehending human mind emerged from animal brains redesigned by thinking tools—words/memes—that allowed us to “create new perspectives on everything we encounter.” In a somewhat fanciful explanation, Dennett claims that words would provoke revisions in brain structure—novel neural architecture. The human mind is a complex extension of the principles of natural selection; it is a new crane.

### **Procrustean Materialism**

The long story of evolutionary change that Dennett tells is framed by a set of philosophical assumptions into which he organizes various pieces of evidence about natural processes, and he then employs explanations that are scientifically acceptable—that is, consistent with an exclusively materialist view of reality. He claims that, in order to heal the “Cartesian Wound” of dualism, we must first recognize Darwin’s revolutionary insight that all design in the world of the living “can be, must ultimately be, the product of blind, uncomprehending, purposeless processes of natural selection.” Note the phrase “must ultimately be.” No other alternative is scientifically acceptable for materialism. He also tells us that the emergence of the comprehending mind “had to be” the result of evolutionary processes, and cultural evolution itself can only be explained scientifically in terms of complex changes in and among physical things. Remember that Dennett has often remarked that DNA is the “ultimate basis” of all agency, meaning, and consciousness in the universe. Any “manifest image” that grants the existence of immaterial reality (including a soul) is really an illusion that can be explained by a materialistic science.

Dennett offers an integration of the various sciences into a master evolutionary theory that serves as a purported explanation of all of reality: a kind of apex of the rational investigation of the universe. This is a metaphysical claim that denies that there is such a thing as metaphysics: a denial that there really are more profound questions about the origin and nature of things than what the natural sciences describe. Dennett not only denies any notion of the world's being created, he also excludes the existence of immaterial and spiritual features of the world. We ought to avoid, however, the intellectual intoxication that comes from the stunning successes of evolutionary biology and the neurosciences.

Materialism fails to recognize that organisms are unities that are more than the aggregation of their constituent parts. To account for the unified whole, precisely as a whole, requires an appeal to something more than just the material parts. Of course, Dennett would say that claims about the whole organism, precisely as a whole, are not appropriate to our "scientific image" of the world; they would be at best "user illusions."

In a way, the "Cartesian Wound" cuts deeper than Dennett thinks. The scientific image of materialism that is to be rescued from Cartesian dualism is itself an inadequate view of the world; it is a remnant of Descartes's philosophical presuppositions. It is not materialism that needs to be rescued, but a radically different view of nature from the mechanistic one set forth by Descartes. We do not get closer to this other view by asserting a spiritual supplement to materialism. We should look, instead, to the more profound natural philosophy of Aristotle and Thomas Aquinas, a philosophy that eschews dualism, materialism, and mechanism: a philosophy that offers a fuller sense of living beings as unified wholes.

### **Purpose and Intelligibility in Nature**

Dennett correctly recognizes that we cannot ignore purposes and directionalities in natural processes. He thinks that the natural sciences must, in principle, offer an exhaustive account of such teleological phenomena. He thinks that we cannot—if we are scientific—appeal to any kind of "top-down" causality to explain the competences we find in nature. There is no Grand Designer.

Yet the Grand Designer that Dennett thinks must be excluded as a kind of "skyhook" is not the Creator of whom traditional philosophers and theologians like Thomas Aquinas speak. God, for Thomas, is not a competing cause among causes in the world, such that one must somehow balance claims about different causes, God and nature. The natural sciences study the various changes, large and small, that occur in the world. God creates a world in which there are real natural causes; He causes things to be the proper causes of their own characteristic actions. As the cause of the very being of things, God is present in a particularly intimate way, not as a part of what He causes, but as the abiding cause of their very existence. God's causality is not "top-down" but rather "inside-out." God is able to be present in such a way precisely because God transcends all the categories of created things. Traditional notions of creation and divine transcendence are ignored by Dennett as he contrasts the self-sufficiency of nature with an unnecessary Designer.

For Thomas Aquinas, to leave unexamined the source of the intelligibility of natural processes, including those of evolutionary biology, is not to think deeply enough about nature. He would agree with Dennett that there are many examples of competence without comprehension in nature, but he would think that a philosopher of nature would then ask how there can be such competence in the first place. For Thomas, divine reason is prior to (and the source of) the natural order: the priority is recognized in the philosophy of nature. Dennett rejects any “Mind first” approach to nature, but the “Mind” that Dennett rejects is an *alternative* to natural causes; whereas, for Thomas, God’s agency is a prerequisite for natural causes. Dennett does not think it is meaningful to ask questions such as why there is something rather than nothing or whether there must be a transcendent source of the “reasons without reasoners” that are found everywhere in nature. These questions are irrelevant for him, since he has a prior commitment to an all-encompassing materialist philosophy.

Rather than think that all things (including minds) *must* evolve because they are exclusively material and thus subject to natural selection, we might begin by questioning whether materialism itself offers an adequate account of nature.

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