

How The Human Got Its Mind

Debunking the Last Great Myth in Psychology

H E N R Y D . S C H L I N G E R

DESPITE THE FACT THAT “MIND” is a pre-scientific concept that dates back at least to the ancient Greek philosophies of Aristotle and Plato, it still occupies a central place as the subject matter of modern psychology and philosophy. Consider the titles of several recent books: *How The Mind Works* (by Steven Pinker), *The Mind's I* and *Kinds of Minds* (by Daniel Dennett), *The Maladapted Mind* and *Mindblindness* (by Simon Baron-Cohen), *Wild Minds* (by Marc Hauser), and *The Mating Mind* (by Geoffrey Miller). While the other sciences have moved well beyond their pre-scientific philosophical origins, psychology has made much less progress. Continuing to focus on mind as a primary subject matter keeps psychology mired in its philosophical roots and is a major obstacle to psychology becoming a true natural science.

Minds, Brains and Metaphors

In 1996, I wrote a critique of evolutionary psychology in *SKEPHIC* (Vol. 4, No. 1) entitled “How the Human Got Its Spots,” a play on the title of one of the *Just So Stories* in which Rudyard Kipling offers a fanciful tale to explain how the leopard got its spots. The term “just so stories” has become a cliché for similarly fanciful explanations of natural phenomena. In the present essay, I argue that the concept of mind is the most egregious just so story ever invented to explain human behavior.

This is a tale about origins. As such, it is necessarily somewhat speculative; but as we shall see, the main issue is not the accuracy of the facts but the central premise, which is that humans do not have minds.

For most of us, it seems self-evident that we

have minds. And probably most of us believe that humans have always had minds and that each of us is born with one. Nowadays, the term “mind” is sometimes used synonymously with the term “brain,” which causes confusion by having two words for the same thing. Most people who use “mind” and “brain” interchangeably think that the brain is the physical basis of the mind. In my view, if one believes that mind and brain are synonyms, then the term “brain” should be used because it avoids all the metaphysical pitfalls associated with discussions about non-physical entities.

This story is not about how humans got their brains, however (although that is a much more scientific and, in many ways, more interesting question to answer). It is about how humans got the concept of “mind.” We have brains, but there is no mind to be found among the physical structures of the brain. Some may protest that mind is not a physical structure in the body, but rather something else. But what? One answer is that if the mind is not a physical structure of the body that can be observed and measured with the methods of science, then we must describe it in other, usually metaphorical, terms. For example, nowadays the mind is described in computer terms even though, as many scientists have noted, the brain, which is said to be where the mind operates, is neither structurally nor functionally like a computer.¹ In fact, the entire field of modern cognitive science is based on a metaphor, called “information processing,” of the mind as a computer. Nowadays, everyone, it seems, talks about cognitive processing. For example, people diagnosed with dyslexia are said to have trouble processing words, as if that explains their behavior.

Over the centuries, many other metaphors have been used to describe the mind in general, as well as more specific functions, such as language. For example, a famous metaphor is Noam Chomsky's Language Acquisition Device (LAD). Of course, there is no real device in the brain that accounts for language acquisition, but the metaphor of one makes the inexplicable seem to be explained. Because the mind and its presumed properties (e.g., memories, representations, schemas, consciousness, etc.) are always unobserved, we are free to describe them using whatever terms we want, which is convenient because it means we never have to be scientifi-

cally accountable. This is also why theories of mind have come and gone, and will continue to come and go if we don't abandon the mind as our subject matter.

The Figurative Mind: Person, Place or Thing?

If humans don't have minds in the same way we have the physical structures of our bodies, then how did the human get its mind? The answer is that humans gave themselves minds. Although the practice of making up names to describe our activity has probably gone on since the dawn of language, it was most likely formalized by those whom we call philosophers. In fact, what we were given by these philosophers was a name, and the name was "mind." But it is not quite this straightforward, because names are usually of things. For example, at birth you were given a name. Now, when someone calls you by name, anyone else can check to see that it is indeed you. Likewise, we call things we sit on chairs, and if I say I see a chair, anyone can check to see if indeed there is a chair present.

Analogously, what is named by "mind"? Consider the following example. If you ask me what 13 times 147 is and, after a few seconds, I say "1911," you might say that I performed multiplication in my mind; some call this "mental" arithmetic. But if by "mind" you don't mean brain, then what exactly did I do and where did I do it? In fact, asking the question in that way presumes there is a place where the multiplication was done. So, we have given that place a name—*mind*. But where is it and what goes on in there? If you ask most people to point to the place in their bodies where the mind is, they point to their head; but, of course, there is nothing in the head but brain tissue. When we do mental arithmetic, we are said to do it in our heads, but, as psychologists know only too well, the subjective experience that leads to such reports is notoriously unreliable and inaccurate. The best psychologists can say is that mental arithmetic occurs in the brain, but the only activity that goes on in the brain is the firing (or not) of neurons.

Still, everyone's subjective experience is that whatever mind is, it is in the head. We seem to think "in our heads," compounded, no doubt, by the presence of our two most dominant sensory systems, vision and hearing, which literally are in our heads. Thus, we report being able to "see"



images (called *imagining*) and "hear" sounds "in our heads." And evidence shows that certain kinds of brain injury can cause problems not only in seeing and hearing, but in thinking and remembering as well. Where do these things take place if not in the mind? (Of course, damaging other places in the brain can cause problems in walking and moving one's arms, but we don't argue that those abilities are in the mind.) And very few scientific alternatives to the notion that these things all take place in the mind have been offered.

Nevertheless, the concept of mind is pervasive. In Webster's *Third New International Unabridged Dictionary* there are almost two entire columns devoted to the word "mind" as a noun. A noun is a thing, like a person, although as B. F. Skinner noted, often when we use the term "mind," we mean simply "person." For example, instead of saying, "I did the multiplication in my mind," it is simpler to say, "I did the multiplication." To say that the mind perceives or remembers adds nothing to the statement that it

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is the person who perceives and remembers. I call this the “mind-as-person metaphor.” Of course, we are still left with the task of understanding what it means for a person to perceive. The phrase *to perceive*, as a verb, implies action, but of what kind? What muscles and/or glands are involved and in what contexts? Obviously, there are similar problems with many other terms in addition to “mind” that are used to describe so-called cognitive activity.

In order to appreciate the difficulty in defining “mind,” consider that it is defined variously as: memory; that which reasons (presumably an organ); the sum total of the conscious states of an individual; inclination; intention; desire; and wish. Synonyms include intellect, soul, psyche, brain, and intelligence. To further clarify (or muddy), the dictionary tells us that “mind indicates the complex of man’s faculties involved in perceiving, remembering, considering, evaluating, and deciding” and is to be contrasted with body, a distinctly Cartesian approach. The concept of mind thus contains everything except the proverbial kitchen sink; it is everything we do. In short, “mind” is defined by using other, equally vague terms, such as “perceiving,” “remembering,” “considering,” “evaluating,” and “deciding.”

A Brief History of Mind

My point in offering definitions is to try to show you that the term “mind” is only that—a word—and that it does not necessarily refer to a person, place, or thing. But if this is true, then what does the term “mind” refer to? And how did we get this name?

Animistic Pre-History. Humans have probably wanted and tried to understand their own behavior and the behavior of other living things since they began to talk. In that pre-scientific world, humans concocted the best explanations they could to try to understand the world around them. It could be said that these explanations constituted the earliest philosophy, in the sense that humans used the best reason and logic their language afforded them.

Although we can’t be certain, many of the explanations hunter-gatherers and herders fabricated to understand the behavior of animals probably involved appealing to spirits or life forces residing within them.² Even the word “animal,” derived from the Latin, *anima* (or soul)

and *animalis* (to animate) reflects this. The view that all living things contain a life force or soul that cannot be explained by natural laws has been called vitalism or animism. Animistic explanations can even be extended to inanimate objects. For example, a rock tumbles down a mountain because it “desires” to get to the bottom, or a tree falls because it is “tired.” Do rocks and trees have minds?

Aristotle's Souls. In his most famous work, *De Anima* (Latin for soul), Aristotle said that souls are what distinguish living from non-living beings. In other words, things that are alive have souls that make them alive. Aristotle then made distinctions between different kinds of souls. For example, all life forms—plants, animals, and human beings—have *nutritive* souls, which enable them to find nourishment, to grow and to reproduce. Animals and humans have *sensitive* souls, which enable them to sense events in the environment. Only humans, however, have *rational* souls, which enable them to reason. According to one historian of psychology, although Aristotle's view of soul appeared to be animistic, it was actually consistent with the view of naturalism, which states that all natural entities, including human beings, are to be understood in the same basic, naturalistic terms.³ Thus, Aristotle's souls were really inseparable from the natural functions of the body, such as eating, sensing, and reasoning. However, with the decline of Athens as a great intellectual center and the ascendance of Christianity, Aristotle's naturalistic souls were replaced by a spiritual soul that was not bound by the laws of nature. In the twelfth century, Christian scholars changed the word “mind” from the naturalistic meaning it had inherited from Aristotle “to mean a nonphysical counterpart to the body” and “a determining agent for human activity.”⁴

Cartesian Dualism. Rene Descartes (1596-1650) is remembered for having invented analytic geometry, for developing a mechanistic physiology, and a theory of reflexes, and for crafting a philosophy of mind that is still very much a part of our modern philosophy of human nature. In a sense, Descartes condensed Aristotle's three souls—nutritive, sensitive, and rational—into just two. The nutritive and sensitive souls were combined into all the functions of the body, which

Descartes thought could be explained and understood completely naturally and mechanistically, that is, in terms of physical laws. Descartes agreed with Aristotle, however, that human reason (and the language used to express it) could not be understood in the same terms as the other bodily functions; he thus reserved the rational soul (mind) for that one function.

Descartes believed that the rational soul also explained the fact that humans, but not animals, had volition or will. Descartes considered animals to be mechanical automata that were completely bound by reflexive, mechanistic principles and, thus, had no free will. Humans, by contrast, could go beyond reflexes to behave freely and consciously. Our own personal, subjective experience seems to confirm Descartes' belief. For example, we seem to be able to do whatever we want, whenever we want. We can even override basic reflexes, as when, for example, we consciously prevent our eyes from blinking at the sudden approach of an oncoming object, or when we forcibly prevent ourselves from coughing or sneezing in a quiet public place. How do we do that without a mind? Descartes believed that voluntary behavior was distinctly human and could not be explained mechanistically. It required another level of explanation. For Descartes it was the rational soul.

Descartes also strongly influenced a theory of knowledge called rationalism, which argues that truth can be found by human reason alone without need “to observe what humans actually do.”⁵ Rationalism is alive and well among many linguists (e.g., Chomsky, Pinker), whose psychophysical dualistic and nativistic theories of mind and language have been readily adopted by many psychologists, thus perpetuating Descartes' legacy.

The concept of free will is still very much associated with the mind, as evidenced in such phrases as “a mind of one's own,” or “I have a mind to.” If we claim that there really is no mind, then we are forced to explain free and conscious action, as Aristotle might have done, in terms of natural laws of learning and physiology. But reducing free will to natural, physical processes won't please many people.

One implication of Descartes' philosophy of mind was that the mechanistic body and the rational soul were made of different stuff. On the one hand, the body was physical and subject to

natural laws. The mind, on the other hand, was not a physical entity and therefore could not be explained by natural laws. It could, however, influence the body, as in the example of consciously preventing a cough or sneeze. This interaction between the mind and body caused what has now become an age-old philosophical problem; namely, how could a non-material entity, the mind, affect a material entity, the body? Philosophers throughout the centuries have made various attempts to solve this problem. For the present purposes, the issue is that for many centuries, people have believed that humans possess both a physical body and a non-physical mind (soul). This position is called mind-body or, sometimes, Cartesian dualism. The study of the body belongs to biology, whereas the study of the mind belongs to psychology (from *psyche*, Greek for soul).

Modern Psychology. The discipline of psychology has assumed the charge—previously assigned to philosophers—of trying to understand the human mind. Beginning in the late 1800s with the German psychologist Wilhelm Wundt, by all accounts the founder of psychology as a formal discipline, psychologists have been interested in the mind, or in mental processes. Despite various attempts by behaviorists to move psychology in the direction of the other natural sciences by studying objective behavior in its own right (i.e., not as a reflection of unobserved mental events), the subject matter of psychology generally remains the mind. Some psychologists even claimed that in the 1960s a cognitive revolution took place, which returned the mind to its rightful place as the primary object of study in psychology.⁶ Ironically, an economist (Herbert Simon) and a linguist (Noam Chomsky), neither of whom are scientists, were “the chief architects of cognitive science.”⁷

Many textbooks now define psychology as the science of mind and behavior, a distinct nod to Cartesian dualism. But defining psychology as the science of mind is an oxymoron, because science, as an enterprise distinct from philosophy, relies on observation to answer fundamental questions, and a (nonphysical) mind is, by definition, not observable. This presents a conundrum for psychologists: carry out a successful program of scientific study of behavior as the behaviorists have done, or flounder in the philosophical trap

of mind.

Many psychologists think they’ve solved this problem by recasting the issue of mind in terms of cognitive events and processes. However, the cognitive processes are the very same as those that make up the mind; namely, memory, imagining, thinking, reasoning, consciousness, and problem solving. Most cognitive psychologists do not think of themselves as Cartesian dualists, however, and they believe that cognitive processes are physical processes of the brain. Nevertheless, some cognitive scientists belie this position. For example, one cognitive neuroscientist claims to be searching for a “grand unified mind and brain theory.” Another has asked, “How does the nonmaterial mind influence the brain, and vice versa?” If we assume that cognitive processes are physical, then we may ask in what form they exist. The strategy nowadays is to turn to neuroscience.

Chasing Cognitive Ghosts with Geiger Counters

It would be easy to say that cognitive processes are synonymous with functions of the brain, but that would negate the need for psychologists and a general theory of behavior. Nowadays, psychologists, lacking other direct evidence of cognitive events and processes, instead point to neuroimaging techniques to provide proof of their existence. It has become very popular to produce images of the brain using functional Magnetic Resonance Imaging (fMRI) while individuals are supposedly engaging in mental or cognitive processing. But one doesn’t have to look too closely at such studies to see that the subjects are engaging in various *behaviors*, such as answering questions, solving math problems, recalling words, etc.

Calling these actions “cognitive” is unnecessary and misleading. Because postulating inferred mental constructs such as volition and central executive does not clarify empirical brain-behavior relationships, using brain-imaging technologies to look for such constructs is simply chasing cognitive ghosts with Geiger counters⁸ and in many ways may represent a new phrenology.⁹

Mind as Behavior

When people perceive, they are acting; when they remember, they are acting; when they reason, they are acting; even when they are being conscious, they are acting. Thus, we can still use

words like “perceiving,” “remembering,” and “reasoning” if we concentrate on what people actually do, that is, their behavior. But believing that such terms refer to mental events or processes reflects psychologists’ and neuroscientists’ inability to move beyond the pre-scientific language of early philosophers.

For example, consider a more parsimonious explanation of mental arithmetic. Asking how such a skill is learned in the first place can give us a clue as to what it really is. Presumably, children are initially taught to do addition, subtraction, multiplication, division, and carry-over operations by writing and simultaneously talking out loud, which, of course, are behaviors. Teachers model, prompt, and then reinforce the behaviors until they become both accurate and fluent; that is until the correct responses occur quickly and correctly. Once teachers are confident that students can behave (i.e., solve numerical problems) accurately out loud, they encourage the students to do the same activities “quietly, to yourself,” or “in your head.” (Parents adopt the same strategy when they teach their language-learning children to name things. When the parents are confident that the children know the names of most things by hearing them say the names out loud, the parents encourage the children to say it to themselves.) The evidence for the continued accurate behavior is the fact that the students produce the same correct answer, which they then say out loud or write down. Thus, what we do when we carry out “mental arithmetic” is to engage in mostly verbal behaviors that then become covert. Mental arithmetic starts out as public behavior and ends up as private. We would then predict that at least some of the neural pathways associated with mental arithmetic are the same as those that occur when the same behaviors are performed out loud.

Viewing behavior in this manner obviates the necessity to speculate about mental and cognitive processes, especially as causes of the behaviors in question, and it locates the study of behavior squarely in the realm of a natural science.¹⁰ In addition, focusing on behavior instead of mind is a much more optimistic tactic because it opens the door for the development of useful practical action, for example, in the form of effective therapies or teaching methods, advances not likely to result from speculating about or studying the mind. As Skinner observed in 1974, “The major problems facing the world today can be solved only if we improve our understanding of human behavior.”¹¹

The behavioral position is no longer a popular one among psychologists. Current notions of mind are appealing, like the belief in ghosts, angels, and spirits, because they keep things that we hold dear out of the reach of science, making them seem more mysterious than they need be.

Nevertheless, just as new findings and theories in the hard sciences have changed dramatically the ways in which we think about nature—in many instances forcing us to abandon enduring beliefs about nature (e.g., a geocentric universe; a flat earth; creationism)—perhaps a similar change is in store for psychology with regard to how we view mind. I suspect, however, that the day when the concept of mind is exorcised from our scientific vocabulary is still a long way off. Until then the only mind humans will have is the figurative one we’ve given ourselves, as a name for all our behavior that we are unable to explain more scientifically. ▼

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