For centuries, debating the nature of consciousness was the exclusive purview of philosophers. But if the recent torrent of books on the topic is any indication, a shift has taken place: Scientists are getting into the game.

Has the nature of consciousness finally shifted from a philosophical question to a scientific one that can be solved by doing experiments? The answer, as with any related to this topic, depends on whom you ask. But scientific interest in this slippery, age-old question seems to be gathering momentum. So far, however, although theories abound, hard data are sparse.

The discourse on consciousness has been hugely influenced by René Descartes, the French philosopher who in the mid–17th century declared that body and mind are made of different stuff entirely. It must be so, Descartes concluded, because the body exists in both time and space, whereas the mind has no spatial dimension.

Recent scientifically oriented accounts of consciousness generally reject Descartes’s solution; most prefer to treat body and mind as different aspects of the same thing. In this view, consciousness emerges from the properties and organization of neurons in the brain. But how? And how can scientists, with their devotion to objective observation and measurement, gain access to the inherently private and subjective realm of consciousness?

Some insights have come from examining neurological patients whose injuries have altered their consciousness. Damage to certain evolutionarily ancient structures in the brainstem robs people of consciousness entirely, leaving them in a coma or a persistent vegetative state. Although these regions may be a master switch for consciousness, they are unlikely to be its sole source. Different aspects of consciousness are probably generated in different brain regions. Damage to visual areas of the cerebral cortex, for example, can produce strange deficits limited to visual awareness.

One extensively studied patient, known as D.F., is unable to identify shapes or determine the orientation of a thin slot in a vertical disk. Yet when asked to pick up a card and slide it through the slot, she does so easily. At some level, D.F. must know the orientation of the slot to be able to do this, but she seems not to know she knows.

Cleverly designed experiments can produce similar dissociations of unconscious and conscious knowledge in people without neurological damage. And researchers hope that scanning the brains of subjects engaged in such tasks will reveal clues about the neural activity required for conscious awareness. Work with monkeys also may elucidate some aspects of consciousness, particularly visual awareness. One experimental approach is to present a monkey with an optical illusion that creates a “bistable percept,” looking like one thing one moment and another the next. (The orientation-flipping Necker cube is a well-known example.) Monkeys can be trained to indicate which version they perceive. At the same time, researchers

What Is the Biological Basis of Consciousness

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The broad brush strokes are visible, but the fine details aren’t. Data from satellites and ground-based telescopes may soon help pinpoint, among other particulars, when the first generation of stars burned off the hydrogen “fog” that filled the universe.

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