

What Makes Us Think? by Jean-Pierre Changeux and Paul Ricoeur

reviewed by [Carol Albright](#) in the [June 5, 2002](#) issue

It will be a long time until scientists and nonscientists will be able to share a worldview, Rudy Baum asserts in a recent article in Chemical and Engineering News. Baum was commenting on two books: *Consilience*, by Harvard's E. O. Wilson, the progenitor of sociobiology, and *Life Is a Miracle: An Essay Against Modern Superstition*, by social philosopher Wendell Berry. For Baum the chasm between Wilson's and Berry's viewpoints shows that the "two cultures" identified by British novelist and scientist C. P. Snow more than 40 years ago are as irreconcilable as ever.

Baum asks us to consider the possibility that "humanity is composed of two fundamentally different types of people. One experiences awe and asks the questions why and how. The other experiences awe and composes a story or a song or dances a dance around a fire." Wilson, in his quest for consilience, wants to know why people tell stories and sing songs and dance dances. Berry, in his contempt for reductionist analysis and the social and economic structures he believes it buttresses, tells Wilson to keep his mitts off that which is sacred.

My own sense is that those of us who live near this boundary should look hard for ways to bridge the gap. We need a bridge if we are to make our culture whole and to solve the burgeoning ethical issues involving both science and human welfare--genetically engineered foods, nuclear energy, human cloning et al.

As exemplars of a dialogue that attempts to bridge the gap we can turn to Jean-Pierre Changeux and Paul Ricoeur. Motivated by a shared and urgent concern to develop a basis for ethics for our time, the two Frenchmen confront their discordant views in *What Makes Us Think?*; with respect and tough honesty, they find ways to reason together. Neuroscientist Changeux chaired the French National Advisory Committee on Bioethics from 1992 to 1998. A nonbeliever, he is well aware that religion sometimes has played a destructive role in human affairs. Ricoeur is a

French philosopher who operates within the framework of Christian faith. In his view, religious belief--and the ultimate reality that underlies it--can provide a means to unleash the good.

Despite their disparities, the two manage to converse intensely and well. The dialogue benefits from each partner's ability to listen carefully and respond clearly, and also from the long perspective, based in intellectual history, each takes. The focus of the dialogue is neuroscience and its relevance to ethics. Brain science casts new light on human identity, raising as many questions as it answers. And as Ricoeur observes, "The brain remains the privileged site of conflicts between science and faith." The need for ethical reflection is acute, the authors agree. Not only has one of the most destructive centuries in human history just ended, but worthy goals are hard to find. Too many people are "left in the lurch . . . without any other symbols than those associated with maximizing profits and individual advantage."

The discussion must begin by addressing underlying issues. First is the nature of interdisciplinary dialogue itself, especially the tendency for two disciplines to attach different meanings to the same word. Second are new views on the mind-body problem. Finally, the authors get to the subject of ethics. Although they disagree on religious issues, they agree that we urgently need to find a basis for ethics upon which both the secular and the religious may build. They ask whether there are elements in human nature that can provide a foundation for ethical understanding.

In interdisciplinary or cross-cultural dialogue people often use the same terms to mean different things. For example, neuroscientists use old categories to refer to the emotions--concepts such as pleasure, anger, distress and fear. But they describe these emotions in terms of neurotransmitters and cerebral geography. Meanwhile, philosophers hear in these concepts historical overtones. A considerable portion of the dialogue between Changeux and Ricoeur is devoted to clarifying terms and unbundling processes, an essential but sometimes tedious job that requires patience on both sides. Anyone attempting a similar dialogue should prepare for a similar investment of effort in this foundational work.

Changeux lists five scientific advances that significantly have altered our conception of the mind-body connection: 1) the understanding that anticipation and intention influence behavior (this insight represents a break with behaviorism, which focused on conditioned responses, not on the possibility of human freedom); 2) neuropsychology, which focuses on structural and functional relationships between

the brain and particular psychological and/or behavioral functions (and dysfunctions); 3) brain imaging to link neural architecture with the dynamics of thought and the development of emotional states; 4) electrophysical experimentation, in which, for example, sites in the brain are stimulated and subjects report the resulting experience; 5) work in brain chemistry, which has yielded drugs to treat psychoses and mood disorders.

Still, it's a mistake to draw facile conclusions from such data. There is no simple overlay between science and human experiences. Subjective experience is more complex than scientific analysis can handle. It is hard to overestimate the complexity of the human brain. The physical brain and our life story have a dynamic relationship. Experience shapes the very structure of the brain, beginning at birth and even before birth. The culture into which we are born, the language we first hear spoken, the emotional climate that shapes our emotions interacts with the potential of the species and our own genetic endowment, so that not even clones can become identical persons.

We also play an active role in our own brain development. To think is to make selections, as William James remarked. The child's first cognitive act is to make categories, and in particular to distinguish the human from the nonhuman. Mental "maps" that work or that bring pleasure become physically encoded in the brain. Not only are we constituted by our interactions, but we in turn map our world. The mind does not contain a replica of some external reality belonging to a wholly finished world, Ricoeur points out. Rather, we impose a mental and physical order upon the world. To do so requires awareness of self and "not-self," and it requires interaction.

The two men address the question of *esprit*, a French term that may be translated as soul or spirit. Its connotations include both the mental (intentionality, meaning, mutual understanding) and the transcendental (the good, the just, the beautiful). Ricoeur would also include inspiration, encompassing enthusiasm, genius and religious feeling. Changeux accuses Ricoeur of introducing teleology here (a great sin, according to scientific orthodoxy). He would prefer instead a third level designated *conatus*--the joyous effort and striving of the creator--a suggestion Ricoeur dismisses as scientific imperialism. But both believe that, in its various forms, *esprit* plays a role in ethical action that goes beyond the structures of the brain itself. A dualistic way of thinking survives, but with a twist. Changeux observes, "My brain does not think, but what I am thinking about always goes on in my brain."

If in fact the self--through the brain--has motivation and intention, forms itself, models the world, knows the "other" and experiences the transcendent, then it is also capable of ethical decision-making. Yet to be successful an ethical system must also harness natural proclivities, such as the drive to survive--present in all life forms--and the awareness of self and not-self--found in sentient beings. On these levels behavior is driven by conscious and unconscious responses such as hunger and lust.

Altruistic behavior toward kin can be explained by the drive to pass on one's own genes. But what of care for others--so-called "trans-kin altruism"? Here the authors revive the idea of "group selection" (currently out of favor among evolutionary biologists). They observe that to survive and reproduce, humans need a collaborative group. Actions that help the group to prosper will, at least indirectly, benefit the individual and his/her kin, and groups that cooperate are more likely to survive. Moral rules, says Changeux, "prevent individuals from behaving in ways that disturb their own lives as well as the life of the social group." Hence cultures throughout the world have espoused some variation of the golden rule. Ricoeur reflects that "the golden rule is a point of arrival in evolution because it is a point of departure in moral reflection." Changeux, eschewing teleology, would change "because" to "and."

Culture, indeed, plays a pivotal role in ethics, and culture may lurch toward progress in knowledge and understanding. Humanity may be ready, says Changeux, for a leap in ethical awareness, so that "the enlargement of sympathy and suppression of violence constitute the raw materials for a universal and fundamental normativity of human morals." In fact, Ricoeur defines evil as the capacity to challenge the value of life. To the avoidance of evil, he would add another goal: the attempt to live well, which echoes Spinoza's "joyous affirmation of the power to be." At the highest level of ethics, the irreplaceability of each human individual is recognized--and indeed, recent findings in neuroscience underscore this uniqueness.

How do religious tradition and praxis fit into such an ethics? They should help people to distinguish between custom and conviction. (For example, it's not necessary to decorate the Christmas tree, but it is necessary to recognize the Christmas event's endorsement of life.) Changeux admits that religious ritual may provide support for believers. Ricoeur endorses the power of myth to coordinate the nature of the world with ethical commandments. Myth, he says, is a way of wrestling with enigma, and it is a product of wisdom. He believes that religion points to deeper truth: it consists in

"a fundamental approval which comes from somewhere farther away and higher than I am, in my courage to live and to make goodness prevail over the evil whose radicality I have both lamented and accepted."

Surely human relationships will always be both consensual and conflictual, involving a contest between love and justice. Still, the search for an ethics for our time is worth the candle. Changeux quotes Heraclitus: "If you do not hope the un hoped for, you will not find." The hope, Ricoeur and Changeux agree, is for "a universal civilization that will be free, just and joyful."

While challenging and enlightening, this book is difficult to read. As the partners puzzle and parry, they use terminology more familiar to French intellectuals than to most English-speaking readers. Their progress is often labored. Yet though many books on the mind/brain problem are easier to read, none engages the two cultures at the depth achieved by Changeux and Ricoeur.