

# LEADING EDGE BULLETIN

April 4, 1983  
Volume III, Number 12  
FRONTIERS OF SOCIAL TRANSFORMATION

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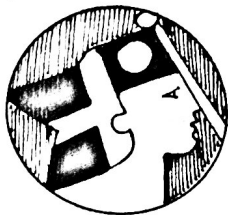
Sperry: Caltech, Biology Dept. 156-29, Pasadena, Calif. 91125. *Science and Moral Priority* is \$16.95 from Columbia U. Press, 562 W. 113th St., NYC 10025.

# Emerging field seeks biological basis of politics

Traditionally, political scientists, economists and sociologists have tried to understand human behavior without reference to our animal heritage. Recent developments in behavioral biology are stimulating some social scientists to reassess their approach.

What are the biological roots of violence? Of monogamy? Of patriotism? Of private property?

Is revolution more likely to occur in underdeveloped nations because the people are hungry and therefore irritable? Are people with Type A behavior more qualified political candidates? Are people genetically programmed to submit to authority to gain security? Is there a biological basis for civil rights?



In short, can public policies be made more consistent with the biological nature

of human beings?

"Putting 'science' into political science has usually meant employing scientific methods to study human behavior," said political scientist Thomas Wiegele of Northern Illinois U., "but a biopolitical approach asks political scientists to use the methods of scientific inquiry while incorporating the findings of the human life sciences."

Recent advances in biology present a challenge to the established interest of political scientists that can no longer be ignored, he said.

Biopolitics is an orientation that acknowledges the person as a complex rational, emotional, biological creature, Wiegele told *LEB*. It attempts to blend knowledge of life sciences with knowledge of social sciences to better understand human political behavior.

But it does not attempt to reduce all political behavior to biology. "Rather, biopolitical research tries to demonstrate that many human activities formerly believed to be exclusively rational or psychological are influenced by biological factors."

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Traditional social scientists look at human behavior as godlike—nonmaterial and exclusively rational, Wiegele said in an earlier book, *Biopolitics: Search for a More Human Political Science* (Westview Press). Biologists, on the other hand, emphasize the animal aspects of behavior to the neglect of the cognitive.

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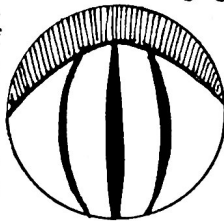
# Biopolitics: Speakers' voices show stress levels

Students of political behavior are beginning to assemble a composite picture of political authorities with the aid of biological information.

Analysis of voice fluctuations in times of crisis reveals changing levels of stress in U.S. Presidents, according to political scientist Thomas Wiegele. If adversaries could detect such changes, they would have valuable additional information.

In one long-term study, Wiegele analyzed Presidential speeches electronically to track shifting psychological states over the course of international crises.

"There is often a gap between what Presidents say publicly and how they really feel," Wiegele told *LEB*. He used the Psychological Stress Evaluator, which processes audio recordings to produce a chart of the patterns of physiologically detected stress. He evaluated speeches by John Kennedy on the Berlin crisis (1961), Lyndon Johnson on the Dominican Republic (1965) and Richard



Nixon on Cambodia (1972).

His findings will be published in a book, *Stress and International Crisis: A Psychophysiological Analysis*.

Prepared Presidential speeches show more stress than unrehearsed ones, he found. They are usually given to a national audience during an awesome event and are sure to be heard by political adversaries. They are the speeches most likely to change the speaker's public image.

In earlier studies, Wiegele analyzed two extemporaneous speeches by Mr. Nixon, one his 1962 California gubernatorial concession and the other during the 1974 farewell to his White House staff. It was not the political themes that caused Nixon the most discomfort, Wiegele said, but the intensely personal ones—for example, concern for his historical image and the impact of Watergate on his family.

What does this imply? "Decisions to restore personal worth or prestige could be fundamentally different from those directed at the precise resolution of political problems." Wiegele: Program for Biosocial Research, Northern Illinois U., DeKalb 60115.

# Mel Konner: biological limits on human spirit

Melvin Konner, author of *The Tangled Web*, Biological Constraints on the Human Spirit, received his doctorate in anthropology from Harvard. He is now completing medical school there and teaching anthropology and psychology at Emory University in Atlanta. EEB interviewed him recently after he spoke at UCLA.

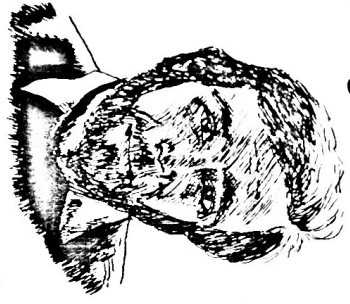
Based on your understanding of human nature and the biological bases of behavior, are you hopeful about the future?  
I'm not hopeful in a religious or utopian sense. In his book *The Biology of Hope*, Lionel Tiger speculates that we could get addicted to chemicals produced in the brain by feelings of hope or optimism. Some people appear to be. I feel disappointment about how things are—but not despair. Things should be a lot better. I find it morally reprehensible to act as if they can't be.

How might an understanding of biological limits affect false hopes?  
False hopes are a principal reason for many unmet expectations. Rising divorce rates may come from a confusion of the difficulties of life with the difficulties of marriage. If we know the biological bases of mood changes, for instance, we may not blame others so much.

What are the findings concerning gender differences?  
Sociobiologists believe males have been selected to be more promiscuous because they can father an unlimited number of children. For women, pregnancy lasts nine months and nurturing takes many years.

## Biological basis of politics? . . .

Comment from page 1  
Wiegelt, director of the Center for Biopolitical Research, believes their work has implications even in international relations. Nationalism may reflect evolutionary adaptation to group solidarity. Collective intolerance erupts when others are seen as not conforming to group rules.  
A nation, then, might be seen as an organized system of intolerance—a form of association in human societies suggested by genetic heritage.  
Biological patterns of interaction can be used to understand how nations interact.  
(Continued, both in the international and animal worlds, refers to a contest for limited resources.  
*Parasitism* refers to one animal's living off another, and *predation* implies one's killing of another to live. These styles of animal relationships might be analogous to those between developing and developed



On the other hand, women appear to do better on their own. Men in our society seem to have more to gain from marriage.

Do you consider human beings to be naturally violent?  
If we are not violent creatures, why do we continue to create situations that lead to violence? Those who say we are not naturally aggressive stand in the way of our understanding—and controlling—this impulse.

Their misunderstanding induces complacency. Information about our animal nature and our basic motivations could lead to a higher level of functioning.  
Violence, after all, is both inherited and influenced by the environment. Experience can change the brain.  
Evolution is the art of becoming—not the science of selection. Evolution is basic

nations.  
*Proton-cooperation* refers to a relationship that is mutually maintained only so long as it benefits both participants.  
*Symbiosis* means both parties profit from a necessary, obligatory interaction. Efforts toward political or economic interdependence can be seen this way. So can antagonistic relationships, such as in the Middle East.

In another form of relationship the mere presence of one thing limits the action of another. Finland, for example, is inhibited by its adjacent border with the USSR, as some animals have to adapt to living near superpowers.

In 1980 the Assn. for Politics and the Life Sciences was founded. The first issue of its journal was published recently and is available from Wiegelt for \$5. Wiegelt, Program for Biowocial Research, Northern Illinois U., DeKalb 60115, (815) 753-1901.

cally a creative act, the individual dialoging with the species.

Is it possible that some people are genetically programmed to be more aggressive than others?  
We could speculate that those who control the political power might be a select biological group. The double 'y' chromosome found in many aggressive criminals should be explored in other highly aggressive men.

What does this imply for the future of women in politics?  
One of the most talked-about statements in my book is the suggestion to replace men with women in positions of military and diplomatic power. If women and men really differ in their tendency to commit violent acts, more women in power could dampen some of the current irrational sources of violent conflict.

What is the potential for new interdisciplinary fields such as biopolitics?  
Many conversations between social planners and behavioral scientists run into trouble. Some social scientists don't want to talk about the limitations of human potential. But politicians and planners can't work without that information.

While we're waiting for human beings to be transformed by some combination of science and magic, we could lose our last chance to ensure our survival. Recognizing our limits is a prerequisite to designing a social system that will minimize those limits.

Are there dangers in behavioral biology?  
Some of these ideas have caused sociopolitical tendencies later regretted by everyone involved. They have been used to justify exploitation of the weak by the strong, racism and anti-Semitism.  
Nobel Prize winner Konrad Lorenz, for example, wrote an article praising the Nazis for protecting racial purity. Although he later retracted the statement, it won't be forgotten. Arthur Jensen and William Shockley applied biology in their speculations about racial IQ's. Evidence has since disproved their theories.

But just because these ideas are easily distorted and abused, we shouldn't ignore them. Many are true—and hold importance for the future.  
What of the human spirit? Are we to be reduced to a sack of chemical processes?

Absolutely not. We long for a new understanding of human spirit. There's a natural need for transcendence in the Emersonian sense of the word. The language of biology and the language of spirit don't often meet. Neither alone can describe our totality. Poetry, on occasion, approaches it.

# 'A beautiful and winged life'

What are the biological roots of the arms race? Are women less likely than men to cause war?

Can recent discoveries in brain research and biological anthropology help answer these questions? Can a better understanding of human biology help politicians in the design of foreign policy negotiations?  
Recent research in hybrid disciplines such as biopolitics and political psychology, and a general trend toward cross-fertilization among all fields, are signs of hope. As sociologist Pierre van den Berghe put it: "The more we learn about the kind of animal we are, the more self-conscious our behavior will become. The more self-conscious we are, the more efficiently we change in the direction we choose."

Insights gained from these efforts are often synergistic—containing new angles of vision not found in single areas of study. Tentative answers to time-worn questions begin to emerge. For example: "How much of what we do is a product of culture, how much genetic?"  
A co-evolutionary theory of biology and culture, nature and nurture, has been proposed by Stanford anthropologist William Durham in *Biology and the Social Sciences* (see review).

Apparently intelligence is adaptive. That is, we evolved the ability to learn via natural selection. Within limits, culture enables us to modify and extend parts of ourselves, thus further affecting social evolution.

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If, then, developing cultures were adaptive for survival, the question becomes: Is today's nuclear culture increasing the odds for biological survival?

The first answer that comes to mind is no. But hidden in our common crisis lies our dormant adaptive intelligence. Confronted with potential annihilation, we perhaps will be inspired to create a new level of social organization—the long-awaited human family.

Henry David Thoreau told the story of such sleeping life in *Walden* (1854). He recounted the tale of a "strong and beautiful" bug that came out of the dry leaf of an old table of apple-tree wood, which had stood in a farmer's kitchen for 60 years. The bug was from an egg deposited in a living tree many years earlier, hatched perhaps by the heat of an urn.

"Who does not feel his faith in a resurrection and immortality strengthened by hearing of this? Who knows what beautiful and winged life, whose egg has been buried for ages under concentric layers of woodiness, in the dead dry life of society—heard per chance gnawing out now for years by the astonished family of man—may unexpectedly come forth to enjoy its perfect summer life at last!"  
—Connie Zweig

## If values were based on science. . .

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# UPCOMING

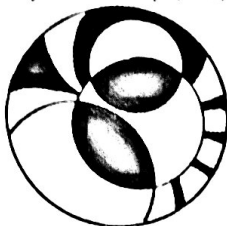
- Issue of Konner, *The Next Step in Evolution*, three-day experience, at the edge of volcanoes, hills and sevens, with Martin Ferguson and various presenters whose work has been featured in *Brain/Mind* 20 May 1, 2131 224 5500 (Los Angeles); Los Angeles April 20 May 1, 2131 224 5500 (Los Angeles)
- Bridging Men and Women Together, lecture April 8, workshops April 9-10, NYC, April 23-24, Boston area, 415 968-0788
- Healing Power of Community April 23-24, Los Angeles, 408 791-1100
- Living in the Present, April 29-30, Denver, 303 996-2401
- Separation, Divorce and Beyond April 29-30 May 2, Kalamazoo, Pa., 405 866-4488
- Women's Health, April 29-30, Denver, 303 996-2401
- Conference for professionals, Dallas, (214) 752-0770
- Future World Expo May 8, exhibits on habitats, robotics, lasers, arts, communications, "target display of the future," Los Angeles, (213) 957-3328
- Searching for the Future: Politics and Action for Today, May 6-7, Davis, Calif., (916) 758-5805, and Value Systems Center, Berkeley, (415) 841-1100
- Politics in a Nuclear Age May 6-7 with John Graham, Rye, N.Y., (914) 967-0960
- Wellness in the Workplace May 9-12, Chicago, (703) 527-1500
- Mobile High-Performance Business Brain May 6-7, Los Angeles, 408 791-1100
- Building a Pleasant Villa, May 10-15, 2001-16, with John Todd, Ellen Gaido, others, Conference with John Todd, Ellen Gaido, others, Walnut, Wash., (360) 231-1804
- Self-Estimation and Romantic Relationships May 13-15, Browning the President: Time, Morality and Self-Estimation July 15-17 with Barbara Branden, Los Angeles, (213) 248-8811
- Workshops on the Future of the Human Mind, with Carlton Fredericks, Donald Arndt, Emmanuel Chetanius, others, Atlanta, (404) 475-0582

# General systems theory makes 'uncommon sense'

**UNCOMMON SENSE: THE LIFE AND THOUGHT OF LUDWIG VON BERTALANFFY, FATHER OF GENERAL SYSTEMS THEORY** by Mark Davidson (\$15.95 from J. P. Tarcher, 9110 Sunset Blvd., Los Angeles 90069).

This first biography of Ludwig von Bertalanffy (1901-1972) is an overdue tribute to a man whose work inspired many seminal thinkers.

The father of general systems theory (GST) was a biologist and philosopher, a radical cross-disciplinarian who believed that if we could find the organizing laws common to all disciplines we would discover a single standard of morality.



This did not imply dogmatic fanaticism, however. Bertalanffy was very much an independent thinker. "As a single-standard-bearer in general, he was a scientist who repudiated the arrogance of scientism, a biologist who rejected the heredity-is-everything dogma of biologism, a laboratory researcher who questioned the absolute value of empiricism, an agnostic who denounced materialism, an advocate of social planning who championed individualism, and a systems science pioneer who warned that systems science could be used for totalitarianism."

His vision was the unity of science through synergy among specialists. "General systems theory should be an important means of instigating the transfer of principles from one field to another [so that it would] no longer be necessary to duplicate the discovery of the same principles in different fields."

GST proved to be a precursor to and framework for many contemporary scientific efforts: the study of differences between living and non-living systems, the dwindling role of a mechanistic worldview, the inherent limitations of behaviorism in psychology, a richer understanding of biological evolution.

According to Davidson, current theories of self-organization proposed by Eric Jantsch, Ilya Prigogine, Rupert Sheldrake and others have theoretical roots in Bertalanffy. Many theories of the mind/body relationship in psychology, states of consciousness and holistic medicine are indebted to him as well.

The basics of GST:

- A system is any entity maintained by the mutual interaction of its parts. It is a manifestation of *organization*, a pattern rather than a pile. "Organisms are charged with form the way batteries are charged with electricity."

- Living organisms are open systems, continuously interacting with the environment. "Living forms are not *in being*, they are *happening*. They are the expression of a perpetual stream of matter and energy that passes through the organism and at the same time constitutes it."

- Systems are hierarchical, composed of smaller systems and also parts of larger systems.

In the March 28 *Brain/Mind Bulletin*: Canadian study frames new right/left brain paradigms; review of *B/MB* literature on hemispheres sheds new light on old assumptions; Harvard study indicates meditators have refined perception, less emotional attachment; hormone aids learning, memory; review of *Chemistry of Love* by Michael Liebowitz. Single issues \$1 each (minimum order \$2) from Box 42211, Los Angeles 90042.

Parts tend to become more dependent on the whole (*progressive integration*) and at the same time more specialized (*progressive differentiation*).

In this way the organism gains new ways of behaving, paid for by limiting parts to a single function (*progressive mechanization*), and the emergence of leading parts, like the brain, that dominate behavior (*progressive centralization*).

- New characteristics emerge from the interaction of parts of a system. Wetness, for example, emerges from the interaction of two parts of hydrogen and one part of oxygen (*principle of emergence*).

- Mechanistic science cannot explain the ability of living things to move toward increasing order and complexity.

- Mechanistic science cannot explain the ability of living things to protect and restore their wholeness (*regeneration*) or to reach goals undetermined by their initial conditions (*equifinality*).

Systems thinking asks that we pay attention to habits of thought we ordinarily take for granted. Bertalanffy called this a "change in basic categories of thought."

Bertalanffy called for a new discipline that studies groups as living wholes.

"Social organizations are like living organisms," Davidson says, "in the sense that both

display wholeness, interact with the environment, exhibit strategies of self-maintenance and express cycles of birth, growth, maturity and decline."

Bertalanffy freely admitted that this model is only an analogy. However, to the extent that organizations behave as if they are organisms, their behavior can be predicted and controlled according to general systems laws. For example, insights from biological laws of growth and competition might be applied to nations or cities.

**BIOLOGY AND THE SOCIAL SCIENCES: AN EMERGING REVOLUTION**, edited by Thomas Wiegale (\$12 from Westview Press, 5500 Central Ave., Boulder, Colo. 80301).

This anthology examines how the new findings in behavioral biology are shaping anthropology, sociology, economics and political science. Though most of the contributions had been published earlier, together they paint a picture of a new hybrid discipline.

The collection includes Edward O. Wilson on "antidisciplines," Kenneth Boulding on economics as a "not very biological science," Roger Masters on politics as a biological phenomenon, Lee Ellis on the decline and fall of sociology and Steven Peterson and Albert Somit on the methodological problems of a biologically oriented social science. —C.Z.

## Perspectivism: a third way

Bertalanffy's perspectivism, a logical extension of the general systems theory approach to knowledge, was his alternative to the extremes of *nihilism* and *absolutism*.

Nihilism proclaims that a world without absolute truth is a world without meaning. In perspectivism, Bertalanffy pictured a world rich with the truth of many perspectives. He endorsed the Socratic maxim that the learned person is someone who is aware of his ignorance. . . . Anyone who believes he has discovered absolute truth will tend to close his mind to valuable new ideas.

Bertalanffy was particularly concerned about absolutism in science, the *scientism* that assigns value to nothing but science itself. He believed scientism could be as dangerous as the fanaticism of religion or politics to the extent that its dogma is used to justify the construction of a society of beehive efficiency. . . .

Nothing scientists do can ever invalidate the effort of those who seek reality by means of metaphysical intuition, he declared. Paraphrasing Michelangelo's statement that "the true work of art is but a shadow of divine perfection," he said the work of science "is but a humble way to redraw a few traces of the great blueprint of creation." —*Uncommon Sense*



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"Also, the future of society itself will be very different depending on whether its value perspectives are shaped by the truths and worldview of science or by other alternatives that now prevail."

Sperry: Caltech, Biology Dept. 156-29, Pasadena, Calif. 91125. *Science and Moral Priority* is \$16.95 from Columbia U. Press, 562 W. 113th St., NYC 10025.

# LEADING EDGE BULLETIN

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FRONTIERS OF SOCIAL TRANSFORMATION

## Nobel laureate urges new values based on brain-science findings

A Nobel laureate recently joined the ranks of those who urge us to apply scientific understandings to how we live our lives. According to Roger Sperry, a shift from a "materialist" to a "mentalist" viewpoint could lead to a new ethic.

"By bringing science and values together in light of what we now know about human consciousness, we could make our values become more responsive to reality and the conditions of modern life," the pioneering brain researcher told *LEB*.

"There are many signs, particularly among younger scientists and in the behavioral sciences, that these ideas are beginning to catch hold."

In his new book, *Science and Moral Priority*, Sperry calls for the merging of scien-

tific findings with human values. The persistence of a mechanistic worldview, he said, means that the latest brain science has not yet been integrated into our understanding—or our values.

Human values stand out as the most powerful force now shaping world events, he said. "The most strategic way to remedy mounting adverse world conditions is to go after the social-value priorities directly."

The brain processes information differently depending on value priorities. "In



Continued on Page 3

## If values were based on science. . .

Continued from Page 1

short, what an individual or a society values largely determines what it does."

Many social values depend on whether we believe consciousness to be mortal or immortal, he said, whether we think mind is localized in the brain or essentially universal. Recent discoveries in brain research make it harder to hold with the long-held materialist doctrine that mind is nothing more than brain.

"The new interpretation gives full recognition to the primacy of inner conscious awareness as a causal reality. The forces of mind and consciousness supersede those of biophysics, chemistry and physiology.

"Emergent views revise interpretations of the conscious self and offer new insights into the nature of values, freedom of choice, personal transcendence and after-life possibilities."

Sperry said his personal worldview changed only after evidence accumulated from scientific research. "Initially my concern with value theory came about only secondarily as a spinoff of work on mind-brain relations. But soon the humanistic implications of my work became apparent, and the tail began to wag the dog."

This led him to a critical examination of the basic foundations of value systems. "Instead of separating science from values,

the current interpretation leads to a stand in which science becomes the best source, method and authority for determining the criteria of moral values."

Sperry is quick to point out that he does not mean to eliminate disagreements about values. Rather, he sees our understanding of nature as a global frame of reference for the different opinions. "What we need to make decisions involving value judgments is a consensus on some supreme interpretation of the universe and the place within it of human beings."

An ethic based on science would entail a substitution of the natural cosmos of science for the purely mystical frames of reference by which people have historically tried to find meaning.

"The future of science will be very different depending on whether it is recognized in the public mind to have competence in the realm of values.

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## BOOKS

## Emergent mentality

Science and Moral Priority: merging mind, brain, and human values  
by Roger Sperry  
Blackwell, £12.50  
ISBN 0631 13199 X

Why do distinguished scientists do it? It is somehow not enough to reach eminence in science; it is necessary to be a prophet too. Or so it seems with Roger Sperry, who was awarded the Nobel prize for medicine in 1982 for his work on split-brain or commissurotomy subjects. Certain philosophers writing on personal identity have invoked Sperry's work in this regard, and Sperry's account of his own work at points within the present book reveals with clarity the interest that that work has. It now seems that from time to time while engaged in this work Sperry was led to pronounce on human values and the relevance of science to them. The present book collects together some of these lectures and papers into a kind of manifesto on behalf of a science-based value-theory.

Back in the 1930s another distinguished scientist, Wolfgang Kohler, wrote a book entitled *The Place of Value in a World of Facts*. Some of the things that Sperry says suggest the same preoccupation with the questions of where values are to be found in the world which science deals with and whether some of the facts that science reveals do not presuppose considerations of value. In fact, however, Sperry seems to want to claim more than that. He points out, early on in the book, that at a meeting in 1980 in Washington members of various religious faiths unanimously agreed that "what the world needs is a new theology, one that would promote the values of conservation, renewable energy resources and the like", and he claims that values of this kind would "emerge from a union of science, on our new terms, with ethics and religion". The evils that such a religion would combat are evils like those of overpopulation and the pollution of the environment - evils that are referred to regularly throughout the book. So it is not just that science can determine values; it is also the recipe for ridding the world of evils.

But how? How, for example, is the problem of overpopulation to be dealt with? On that Sperry is remarkably silent. Even if we were convinced that his new "religion", based on some conception of what facilitates survival, had validity it is less than clear how it would go about solving the world's problems. How could science deal with the problem of overpopulation without coming face to face with social, political and moral issues concerning which scientists *qua* scientists have no particular expertise? I do not think that the book gives any real answers to these questions.

The illusion that it might do so is, I think, produced by a certain train of thought that seems to underlie a good deal of what Sperry has to say. It runs something as follows: Values are subjective. They are therefore mental ("subjective values, like other mental phenomena..."). The mental can be shown to be something emergent arising from complex brain structures but such that it can at the same time affect those brain structures and the processes that occur in connexion with them. (This is Sperry's own theory which, confusingly, he opposes to dualism, on the grounds that the mental is impossible except in connexion with brain processes, as well as to forms of materialism.) Hence science in general, and brain physiology in particular can determine values and so dissolve the fact-value fallacy.

This is a tissue of confusions. The theory of the mind-body relation offered is not perhaps so surprising, although Sperry's way of presenting it, in terms of high-order cerebral processes constituting a dynamic system of which the mental is a part, may be. Sperry rightly sees parallels between his views and those of Sir Karl Popper and Sir John Eccles in *The Self and Its Brain* (Springer, 1977), although his quarrels with them on certain points and Popper's defence of indeterminism and Eccles's acceptance of dualism in Sperry's

sense, with the conscious self "having supernatural origins". Some might object to Sperry's suggestion that something that is emergent from other processes can have a causal control over those processes. I am not myself sure whether one should object to that.

Nevertheless, exactly what states of consciousness are and how they can control physiological processes remains very obscure. There is one place where Sperry says that mental states are "built of, composed and constituted of physiological and physico-chemical elements, and thus, in the sense of the definition, reducible to these". But he goes on to deny that they are reducible to these in another sense, in that the whole is not reducible simply to the parts. None of this, however, answers the question of what exactly consciousness is, and the fact that Sperry's rejection of the identity thesis, epiphenomenalism and such like theories does not itself help to answer that question.

Suppose, however, that one waives all doubts on this score, what has it all to do with values? The fact that mental states are emergent from brain structures implies of course that consciousness of value, beliefs about values and the like are similarly emergent. If states of consciousness may control what happens to the body, so of course can beliefs about values. So it is not to be denied that, in Sperry's words "Human values, viewed in objective scientific perspective, stand out as the most strategically powerful causal control force now shaping world events... What an individual or a society values determines very largely what it does."

What does it mean, however, to say, "As a social problem, human values can be rated above the more tangible concerns such as those of poverty, pollution, energy, and overpopulation on the grounds that these more concrete problems are all manmade and are very largely products of human



Roger Sperry

values"? Is it even true that these problems are caused by beliefs about values, let alone by values themselves? Is it the case that values are subjective? Beliefs about them may be. Values may be, in the sense that they imply mentality. But if values themselves are subjective (which it is clear they are not, or not universally at any rate) they are so in a quite different sense.

## Shared desires

The Shaping of Man: philosophical aspects of sociobiology  
by Roger Trigg  
Blackwell, £12.50 and £5.95  
ISBN 0 631 13023 3 and 13028 4

The argument, such as it is, of Roger Trigg's new book runs as follows.

The possibility of our understanding people from different cultures, and indeed of our recognizing them as men and women at all, requires that we share a common human nature with them. However, the standard philosophical and sociological conceptions of man fail to provide any assurance of such a common humanity. It is only when we view men and women as members of a single biological species that we succeed in grasping what makes us all humans together.

Not that we should fall into the reductionist mistake of thinking that our biological make-up explains everything about us. In so far as sociobiology denies the existence of human rationality and human freedom it can only be self-refuting. Nevertheless, we shall miss what makes us distinctively human if we fail to recognize that behind these higher faculties lies a common genetic inheritance of shared desires and inclinations.

Trigg's treatment of these issues left me with a number of puzzles. For a start, the crucial premise, that understanding presupposes some common human nature, is pretty much plucked out of thin air. He wields this premise freely enough in the first half of the book, using it to dismiss such varied figures as Sartre, Durkheim, Collingwood, Dennis Nineham and Le Corbusier. But since he nowhere stops to explain in any detail what he means by "understanding" and "human nature", it is difficult to know what to make of these attacks.

Rather more seriously, this lack of explicitness about his initial problem raises doubts about the sociobiological solution he offers. Certainly at first sight it seems an unlikely one. A sympathetic reader might be prepared to grant that there is some sense in which "understanding" re-

quires a sharing of concerns and experiences. But a sharing of genes? Couldn't a race of alien beings happen to have similar lives to ours? Is E.T. just a conceptual confusion? And what about the point, which Trigg rather skates round, that from the sociobiological point of view there may in any case be significant genetic variation within the human race?

Then there are the reservations about sociobiology which stem from Trigg's conviction that the existence of human reason refutes any purely materialist view of man. This is a respectable enough philosophical position. But it is by no means uncontroversial, and somebody who makes as much of it as Trigg does owes us more by way of argument than the blunt assertions that he provides.

It is possible that I am doing Trigg an injustice with these complaints. He does say things at various points which bear on the issues I have raised. But unfortunately the whole debate is conducted on such a level of vaguity that it is very difficult to get to grips with his views. Thus, to take but one example of his style, in discussing Collingwood he writes:

The more this kind of view harps on the differences between men, the more curious is the existence of history as a discipline. Collingwood himself talks of bridging gulfs, and it is salutary to remember that doing so cannot be taken for granted. If there is a gulf, how is understanding possible? ... What bridges are available to let us cross what is often a very wide gulf and even explain what the differences are?

This is not so much argument as effusion, and not very elegant effusion at that.

Trigg does, however, manage to touch on a large number of interesting topics in the course of his ruminations, and it may well be that there are people who would find *The Shaping of Man* a good read. But those who are used to elements of argument and analysis in their philosophical diet are likely to find it quite unsatisfying.

## David Papineau

David Papineau is lecturer in the history and philosophy of science at the University of Cambridge.

Hence Sperry provides no dissolution of his so-called fact-value "fallacy". And when he speaks of the "designation in very broadest terms of what is good, right or to be valued morally, as that which is in harmony with, sustains or enhances the orderly design of evolving nature including its human apex," and goes on to speak of what contributes to the "grand design of the creative process," what has that to do with science, let alone the facts about brain processes? Science, we are told, can provide the "ultimate frame of reference for social values". Are we then to judge everything according to its place in the grand design of the creative process - and how do we assess that? What in any case has it to do with the thought that values are subjective, thus (according to Sperry) mental and thus (according to Sperry again) emergent controlling factors in dynamic cerebral systems?

The pity of it all is that Sperry's solution of the mind-body problem might conceivably be defended (although more detail is required than Sperry offers here) and his account of cerebral processes themselves is fascinating. I say that the solution of the mind-body problem might be defended. It is doubtful whether anything in the fascinating facts that he adduces, if only briefly, about cerebral processes shows his "solution" to be the most plausible one. The current philosophical situation with regard to that problem is a complex one, but one form or another of materialism is dominant. There are a number of perennial philosophical issues, particularly that concerning intentionality (the directedness of the mind towards objects) which comprise obstacles in the way of a satisfactory materialist solution. At all events, no completely satisfactory theory of that kind is at present in the offing, in my opinion. Hence it may well be that an honest approach to the problem may entail moving in Sperry's direction. Nevertheless, if one is to think that that is a

satisfactory solution, the terms of reference will have to be much more precisely determined than is the case in what Sperry has to say.

It may be salutary, all the same, to learn that another distinguished neuroscientist finds materialism an unsatisfactory theory in relation to the facts at his disposal. It is quite another matter to think that Sperry's application of all this to questions about values is any more than a confusion of ideas. As I have pointed out, it is an unjustified jump to move from considerations about mentality to considerations about values, and another unjustified jump from that to the thought that science can somehow, just like that, provide the solution to the problem of evils such as overpopulation and environmental pollution. Of course it can help, but issues such as these involve at certain points profound moral and political decisions. No amount of preaching can obviate the necessity of making such decisions, and nothing along the lines that Sperry sets out will make the decisions any easier.

The foreword, by Colwyn Trevarthen, makes reference to Sperry's view that "god-like perspectives", relevant to all creation, should be over-riding, and the dust-cover refers to Sperry's belief in the pre-eminence of acquired values over what is purely biologically determined. These things are undoubtedly to be found in Sperry's book, particularly in the later chapters. They are sentiments that might be accepted, even applauded, even if they would require considerable amplification before a final assessment of them will be possible. However, they do not follow from Sperry's programme of, as the sub-title of the book has it, "merging mind, brain and human values". For that programme, sadly, involves philosophical confusions.

## D. W. Hamlyn

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## Out of time

The Form of Time.  
by Elliott Jaques  
Heinemann Educational, £12.50  
ISBN 0 435 82480 5

Time, argues Elliott Jaques, is two-dimensional. The natural sciences can get by with a linear, one-dimensional view of time; but the human sciences, if they are not to distort their subject-matter, require a richer conception of time as two-dimensional.

On the obvious interpretation, this claim that time is two-dimensional implies that we need two independent coordinates in order to fix the temporal location of an event. It also implies that there exist alternative paths between distinct temporal locations, that there can be closed temporal paths, and so on. But Jaques does not say these things explicitly about the topology of time. It turns out, in fact, that his loose talk about the "dimensions" of time is metaphorical at best. Thus the second dimension of time which supposedly exists in addition to the dimension recognized by the natural sciences is defined as "the dimension of prediction and intent - which contains the conceptions of goal-directedness and of what will happen, in the continuously present field of past-present-future which co-exist in the interaction of memory, perception, desire and anticipation".

Now, the key idea here seems to be that past, present and future are "simultaneous regions in the field of human intention". But this is, of course, nothing more than a highly confusing and dangerous way of restating the banal fact that my present memories are memories of the past, and my present intentions are intentions to do things in the future. The reality of Jaques's putative second dimension of time thus consists in nothing more exciting than the fact that people have memories and intentions.

It is no wonder, then, that Jaques thinks that the human sciences need to conceive of time as two-dimensional. For this is just another, rather bizarre, way of saying that the human sciences are concerned with in-

tentional human actions (rather than behavioural episodes described in purely physical terms). But this old point solves no problems at all: on the contrary, it raises just the issues which have dominated the philosophy of the social sciences for the past two decades.

The underlying argument of *The Form of Time* is therefore quite devoid of serious interest. But, page by page, the book has a certain fascination. For it is just about the worst argued book that I have ever read, and a rich source of confusions, fallacies, and elementary blunders.

Consider, for example, the following typical passage where Jaques is arguing that it is a mistake to say of an event which is now present that it was once in the future. "No event can be said to exist in the future or ever to have existed in the future. We can never know what will exist, any more than we can know the *Ding-an-sich* of the noumenal world. The birth of Julius Caesar could no more be said to exist in the future in 200 bc than the birth of goodness-knows-who in 2200 ad can be said to exist in the future as I write now. To say that it does so exist is to return to the mechanistic and absolute determinist world which is so devoid of life that it would not really matter one way or the other whether any one were born at all in 2200 ad".

There are at least six things wrong with this. For a start, even if we cannot know anything about the future - which needs to be shown - it does not follow that future events do not exist. Further, the ontological status of the future has plainly nothing to do with either mechanism or determinism (for both ideas can be articulated without settling the ontological issue). Again, even if determinism is true, that does not obviously make the world "devoid of life" either literally or metaphorically. And so on.

I am afraid that much of the book is equally hopeless. Although Elliott Jaques, a professor of sociology, has done a fair amount of philosophical homework, his excursion into the philosophy of time reveals him to be sadly out of his depth.

## Peter Smith

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## BOOK REVIEWS

Science and Moral Priority. R. SPERRY. Columbia University Press, New York (1983).

This book will not be much appreciated by those who like close argument or have a penchant for consistency. There is no central argument, but the delineation of a point of view that is dizzyingly eclectic. Maybe there isn't in fact even a single point of view presented, but rather a set of points of view between which the reader criss-crosses at Perry's direction.

There are two dominant themes, one metaphysical, the other ethical. Let's consider the metaphysical motif first. The closest Sperry comes to putting it in one mouthful is on p. 92:

"conscious phenomena as emergent functional properties of brain processing exert an active control role as causal determinants in shaping the flow patterns of cerebral excitation."

The text indicates that Sperry is committed to the following: consciousness (i) "emergent" (pp. 32, 81), (ii) "not reducible to... physicochemical elements" (pp. 79, 28, 34, 65), (iii) nonmaterial, i.e. "mental" (pp. 30, 36, 60, 77-103), (iv) "a very real causal agent in the causal sequence and chain of control in brain events" (pp. 31, 79-82), (v) dependent upon brain events for its existence (pp. 36, 92), (vi) determined and self determined (pp. 27, 99), and (vii) owes its subjective mental qualities and meaning to the "functional" roles of the brain events from which it emerges (pp. 34, 79).

This is an impressively large collection of metaphysical theses. Sperry claims to be in league with functionalists, emergentists, mentalists, Popper (pp. 86-88) and Eccles (p. 85), though he disavows their (or anyone's) materialism, reductionism or behaviorism (pp. 90, 93). Any sympathetic reader can see that Sperry has grasped the virtues of the various positions he assumes, and there are good odds that a reader with opinions about metaphysics will agree with some thesis Sperry affirms. Those readers pressed for time may prefer to achieve precisely the same degree of agreement on precisely the same points by reading Sperry's more succinct presentation on pp. 116-126 of "Forebrain commissurotomy and conscious awareness" *J. Med. Phil.* 2, 101-126 (1977). Since Sperry does not argue these in either presentation of them, the only logical exercise the book provides is entirely of the reader's own choosing.

I was spurred into exercise by Sperry's announcement that "No logical flaw... has yet come to light" (p. 83) in this thesis, and set for myself the following problem: is it consistent to believe both in emergentism and in empirical science? The first desideratum of this exercise is a definition of emergence. One staple of the emergentist mental diet is the idea that emergent things are unpredictable in some sense (let's use "things" to mean any of substances, properties, events, facts, etc.). Sperry holds that emergent things, in this case the "mental images, ideas, inner feelings and other subjective phenomena" (p. 84), are "in principle, predictable, though with few exceptions, it is not so in practice," since "... every time the elements of creation... are put together in the same way under the same conditions... the same new properties would emerge" (p. 89). The mental emergents "generated from neural events" (p. 92) are causally connected to the things from which they emerge: "Mind Moves Matter In The Brain" says Sperry's section headline on p. 81, and the causal connection, moreover, is not merely top-down. "Interaction is mutually reciprocal

between the neural and mental levels" (p. 92). In addition to this "interlevel causation", the emergent mental things behave in a scientifically scrutable way; they "operate and interact by their own causal laws and principles" (p. 92, cf. 102). By the sounds of it, the new mental emergents would seem to have just the sort of characteristics to make them a part of the world studied by empirical science. So, according to Sperry, belief in emergence and science is consistent: that is, the emergent things are scientifically respectable. But, on this account we must wonder why the emergent mentals are not just ordinary things in the physical world—how do they merit the title of "non-physical and emergent"? Suppose scientists were to discover "emergent phenomena" governing other phenomena in, say, microphysics. Certain "emergent" parameters  $E_1, E_2, \dots, E_n$  are found to "interact by their own causal laws and principles" and to causally interact with the microphenomena in question. This amounts to saying that  $E_1, E_2, \dots, E_n$  are functionally interrelated (each is a function of some other, or some other is a function of it), and that certain microphysical parameters  $M_1, M_2, \dots, M_m$  are functionally interrelated with some subset of  $E_1, E_2, \dots, E_n$ , as well. In such a case, what would we make of the physicists' claim that  $E_1, E_2, \dots, E_n$  are "emergent"? Suppose that they try to "explain" this to us by saying that  $E_1$  and through  $E_n$  "supersede" (p. 36), "transcend" (p. 92) and "supervene" (p. 95) the physical, that they exist on a different "level" (p. 92, and *passim*) from the physical? Surely we would want to know what it is that is so special about these new parameters, why they, among the many other parameters that figure into empirical science, transcend the physical—that is, are in some sense or other nonphysical. It would not do to point out that  $E_1, \dots, E_n$  are not directly observable, for many quite physical parameters, like simple mass or sophisticated electromagnetic flux-density, are not directly observable. It would not do to impress us with the utter strangeness of  $E_1$  through  $E_n$ , and the amazing aspects of TE, the theory in which the emergents play their roles. Things can be as strange as charmed quarks grazing the event horizon of black holes (supposing there are such things) and be as physical as dogs. It would make no difference at all if  $M_1, M_2, \dots, M_m$  were microphysical parameters of grey matter—nothing is more physical than a brain or nerve. Even if we acquiesce to the idea that  $E_1, E_2, \dots, E_n$  are mental, that by itself will not make them nonphysical—unless we are to just beg the question against functionalists and physicalists. At this point, the supposed physicists might bring out their trojan horse: TE "cannot be reduced to... neurophysiology" (p. 92). Given what has been said so far, there is nothing which would impede such a reduction. Even the examples of the relationship between emergent things and plainly physical things which Sperry provides are perfect models of the reducibility which he denies. Consider this one: "One can compare the rolling wheel to an ongoing brain process" (pp. 93-94). Here "the atoms and molecules [of the wheel] are caught up and overpowered by the higher properties of the whole." In short, Newton could calculate the path of the rolling wheel by reference to its "higher properties" (mass, center of gravity, shape) while in the dark concerning its microstructure. But this is patently a case where there is no sense to the notion that the "higher" properties of the wheel are not reducible to (i.e. explainable



by, functions of) the properties of its molecules. It is the way the wheel's electrons behave that keeps it in the round, the disposition of atomic nuclei that determines its center of gravity, etc.

So, the scientific respectability of emergent things brings in its logical wake the falsity of nonreducibility, and the incoherence of emergentist theses. On the other hand, if the emergentist is not to be stripped of his colors, he must insist on unpredictability in principle of the emergent on the basis of the nonemergent, and/or indeterminism, and/or independence from physical causation, *aut cetera*. But then he must admit that the emergent is scientifically inscrutable.

This ethical leitmotif which sounds here and there in passing is this (p. 113):

"Science...[is] the best source, method, and authority of determining the ultimate criteria of moral values and those ultimate ethical axioms and guidelines to live and govern by."

The argument for this may be paraphrased as follows: the values a person actually has are emergent properties which

partly determine her behavior. Such things as these values may be studied by science (how else?). Therefore, science must be looked to for moral guidance, that is, to determine which values she ought to have. But Sperry cannot derive an "ought" from an "is" in a book as short as this one. And derived or not, Sperry's candidate for "Prime determinant" is a letdown (p. 22):

"The grand design of nature perceived broadly in four dimensions to include the forces that move the universe and created man, with special focus on evolution in our own biosphere, is something intrinsically good that it is right to preserve and enhance, and wrong to destroy or degrade."

No one promotes nuclear war on ethical grounds, if that is the issue. I don't think anyone would disagree with this maxim—certainly it does not disagree with anyone or anything. How, after all, could anyone be so unnatural as to go beyond or against the grand design of nature? Short of violating the laws of nature, it cannot be done—so, it cannot be done.

J. Foss

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**Neurobiology of the Hippocampus.** W. SEIFERT (ed.). Academic Press, London (1983). 634 pp, £40.00 (\$69.50).

In the last 9 years, several books have appeared that are concerned with the hippocampus and the septum. In addition to the two volumes on the hippocampus edited by Pribram and Isaacson (1975; but apparently gearing up for a second edition), and two other books that are essentially presentations of particular theoretical positions (O'Keefe and Nadel, 1978; Gray, 1982), there are two further works that are in fact simply collections of published articles from conferences. One set was edited by De France (1976), and was based on a conference on the septal nuclei, held at Wayne State University in 1974. The other was based on a Ciba Foundation conference on the septohippocampal system, held in London in 1978. These six volumes between them contain a great deal of information about the hippocampus, and also about those areas most closely related to it via its afferent and efferent connections. The books deal with major topics in anatomy, physical, psychology and neurology, and they also provide information that helps to fill in many of the somewhat indeterminate points that lie in between each of these reasonably well-defined areas of study. They offer both reviews of the existing data and theories whereby these data can be interpreted.

The latest offering to reach the hippocampophile section of the scientific community is a further set of conference presentations, edited by Seifert, and based upon a conference that took place in 1981. Clearly, in order to be worthwhile this book needs to contain a good deal of information that was not included in any of the earlier works that I have already referred to; given that the conference took place only 4 years after the Ciba Foundation symposium (and that nine of the contributors at this relatively recent meeting were also contributors at the Ciba Foundation meeting) one might understandably suspect that one will have seen it all before. I am pleased to be able to say that one would be wrong.

The new information that this book provides is not a result of a radical new "neurobiological" approach to hippocampal function; as any cynic would expect, the topics that are dealt with here are much the same as those that have been considered in previous books with less fashionable titles, as a brief resume of the contents will indicate. The book is divided into six sections. The first is concerned with anatomy, physiology, development and cell biology; the second with neurotransmitters, modulators and plasticity; the third with theta activity; the fourth with behaviour and learning; the fifth considers hippocampal functions in pri-

mates and man (though why this was not integrated with the fourth section is not at all clear to me: it does deal with the same topics); and the sixth section contains a general discussion, albeit by rather a selected subsection of the participants. Thus the overall subject matter of this book is not radically different from that of the Pribram and Isaacson volumes, and in some respects differs little from that in the Ciba Symposium.

The attraction of this work is thus not to be found in new areas of information, but rather in the new work on established topics. This may seem surprising given the delay between the conference and publication of the book, but it looks as though many of the contributors made a serious effort to refer to work that appeared after the conference, but before the final proofs had been set, and so the effects of the delay are not so marked as they might have been.

The most disappointing aspect of the book is the lack of any complete review of hippocampal anatomy. That is not to say that there are no important points made about this topic; the book contains some distinctly interesting views about what our knowledge of the anatomy might lead us to expect that the hippocampus is equipped to do. However, you could not buy this book as the one up-to-date complete guide to the hippocampus, and expect to know about hippocampal anatomy. This omission is not as bad as it sounds, since the reader is referred to excellent reviews (one of which is indeed in the published Ciba Symposium) which will fill in the information. Still, it would have been an advantage to have the information included.

In most of the other areas covered in the book, there can be found truly excellent chapters. Some of these are mostly reviewed material, while others also present original data, some of which are still unpublished elsewhere. Thus the book contains information that is at present unobtainable in another form. I particularly like some of the chapters concerned with long-term potentiation (or synaptic enhancement, if you will), which are easy to understand, thought provoking and scattered with interesting findings that may well be unfamiliar to most readers. There are also particularly important chapters on memory that are well worth the reader's time. These two areas in particular seem to me to be the strong points of the collection.

At the conclusion of the Ciba Symposium, the late Abe Black proposed, and the other contributors generally agreed, that the hippocampus seemed to function as a comparator that serves to detect regularities and mis-

Sperry, Roger. *Science and Moral Priority*.  
 New York: Columbia University Press, 1983. Pp. xiv + 150. \$16.95 (cloth).

*Ethics 7/84*

Roger Sperry is a Nobel Prize-winning psychobiologist, whose major contributions include research in the split brain in animals and humans and a theory of brain activity which attributes causal force to consciousness. Some of this work is discussed, or at least mentioned, in *Science and Moral Priority* and constitutes the only saving grace of the book. For the most part, however, the interesting results of brain research get lost in this collection of short essays, most previously published, on the moral significance of scientific research (especially brain research) and on the need to develop a scientifically based ethics. The ends Sperry favors are unobjectionable: he wants humanity to avoid nuclear holocaust and mass starvation due to overpopulation, and he wants more federal funding for research in neuroscience (see chap. 7). Unfortunately he appears to believe that ethics is a subject simple enough that a great mind (like his own) can contribute by simply sitting down in front of a typewriter. It turns out ethics is more difficult, so Sperry's book, while it may contribute to higher government investment in neuroscience, does not contribute much to ethics.

K. S.

*in Ethics*

Karol Soltan (University of Maryland)

Dept. of Sociology  
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 Rochester, N.Y. 14627

Source: National Faculty Directory 1985 and 1984

Not in "Who is who in America"

Not in "Book in Prints"

Not in Caltech Catalogues

Only possibility: Computer search of her articles  
 in journals.

V-13  
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KIRKUS REVIEWS  
NEW YORK, N.Y.  
S.M. N/A

NOV 15 1982

Sperry, Roger  
SCIENCE AND MORAL  
PRIORITY: *A Merging of  
Mind, Brain, and  
Human Values*  
Columbia Univ. Press \$19.95  
1/17 LC: 81-24206  
SBN: 231-05406-8

Speculations by the 1981 Nobel-laureate neuroscientist on the relationship between his findings and the grand scheme of things—with a postscript by “Convergence” series editor Ruth Nanda Anshen. Sperry’s research showed that when the cerebral hemispheres were disconnected, each half behaved independently; the two shared many capacities, but also had specialized functions. So Sperry came to think of mind and consciousness as emergent causal forces: not parallel systems in a mind-brain dualism, and not reducible to nerve cells and brain structure either. Now, expanding on the causal theme, he expresses the hope that mind will be used in the conscious creation of a science of moral values. Such a science would replace the narrow earth-centered or man-centered myths and religions (and Marxist ideology) with notions of the interdependence between all living things and the biosphere as a whole. Protection of life and the planet from war, overpopulation, and depletion of resources would be axiomatic. Recurrent motifs are today’s world crises; dissatisfaction with traditional reductionist science and technology; a conviction that brain research is moving toward a more mentalist and holistic atmosphere; and the feeling that mankind should further the work of evolution toward progress, complexity, and moral order. One can agree with Sperry that science is not (and should not be) divorced from moral values and concerns—but still question whether science itself can be the basis for moral precepts. One must question, too, whether scientists—especially neuroscientists—are moving toward hierarchical emergent-force thinking. Sperry’s moral science seems rather to be an amalgam of humanism, ethical culture, and perhaps some of Teilhard de Chardin’s mysticism. Moral, yes; science, no.

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K-15



CHOICE  
CHICAGO, ILL.  
M. N/A

JUN 1983

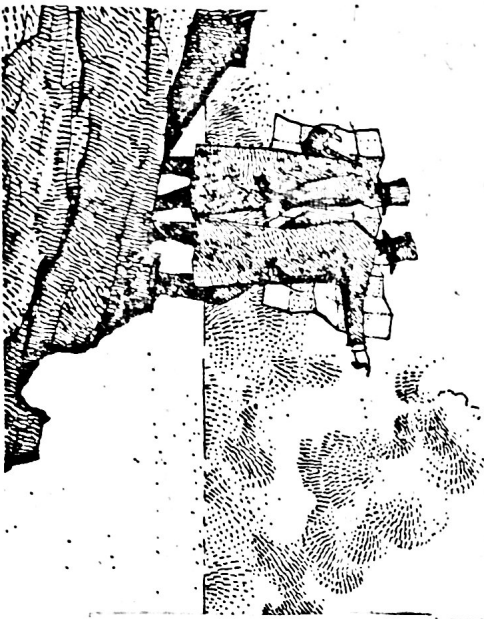
**SPERRY, Roger (Roger Wolcott). Science and moral priority: merging mind, brain, and human values. Columbia, 1983. 150p (Convergence) 81-24206. 16.95 ISBN 0-231-05406-8. CIP**

Roger Sperry, Nobel Prize laureate psychobiologist, has written an unusual book in which he broadly outlines a theory that attempts to merge mind, brain, and human value studies. Sperry wants to fuse science, ethics, and religion in such a way that we open our value/belief systems to free scientific inquiry and empirical examination in general so that rigorous principles normally reserved for scientific investigation would be applied to the whole realm of values. To begin this enterprise Sperry looks at such issues as values—today's number-one problem; mind, brain, and humanist values; ultimate frames of reference; messages from the lab about values; bridging science and values; mind-brain interaction: mentalism—yes, dualism—no; toward a union of science with ethics and religion—to mention a few major topics. These topics and the book as a whole are boldly presented. Indeed, few of Sperry's colleagues will want to follow him into this uncertain territory where only philosophers, theologians, mystics, and seers have dared tread before him. If the book has any failing, it is that Sperry neglects to give much weight to our human penchant for totally irrational activity: we do not always do what we know we should. However, if this book opens the desired dialogue between science, ethics, and religion that results in the worldwide ethical system Sperry foresees, its shortcomings will be amply redeemed. College, university, and public library collections.

# The New York Times Book Review

March 27, 1983

## NONFICTION



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**SCIENCE AND MORAL PRIORITY**  
*Merging Mind, Brain and Human Values.*  
By Roger Sperry.  
150 pp. New York: Columbia University Press.  
\$16.95.

For the scientist who has devoted his career to investigating a narrow, technical problem that can only be understood by a narrow, technical few, the opportunity to reflect on the philosophical aspects of his craft for a large public seems to invite a meditation of almost cosmic proportions. Jacques Monod ("Chance and Necessity"), Norbert Wiener ("God and Golem, Inc.") and Erwin Schrodinger ("What Is Life?") are now joined by Roger Sperry, a neurobiologist at the Califor-

nia Institute of Technology. Mr. Sperry received the 1981 Nobel Prize for his studies of the split brain, a condition that arises when the nerve bundle connecting the brain's left and right hemispheres is severed, an operation sometimes used in the treatment of epileptics.

From his research Mr. Sperry has fashioned an ambitious argument for a scientific housecleaning of the existing moral and social order. For centuries philosophers have denied the possibility of jumping to the realm of morals and values from the realm of behavior and social structure—that is, moving from what is to what ought to be. In neurobiology, in particular, scientists have ignored that shadowy entity called consciousness or the soul, because they have regarded the brain as explicable solely in terms of its network of nerve cells.

But Mr. Sperry believes that somehow from the brain's 100 million nerve cells a consciousness has emerged to become the chief generator of values for life on earth, and that, as a causal agent, this human consciousness is within the reach of science. Mr. Sperry calls for our value systems to be overhauled along new scientific lines.

But nowhere in his attempt to force the complex world into a conceptual net does the author

... structure our value systems. Instead Mr. Sperry is buoyed by the belief that a rigid hierarchy of moral principles will enable each principle to be rigorously determined from the ones preceding it. "Given any desired goal," he writes, "that which helps toward attainment of the goal becomes good, and that which obstructs the goal becomes bad."

Even if all the world were to recognize with Mr. Sperry the self-evident goodness of such things as the preservation of the environment, the elimination of poverty, the reduction of overpopulation and the abolition of nuclear arms, science alone could not dictate how to achieve those ends. Is the damage to the environment caused by strip mining justified if it makes the United States less dependent on Middle Eastern oil? If it is worth \$135 million to forestall an epidemic that might claim a million lives, how much is it worth to save only 10 lives?

Such decisions necessitate moral and political trade-offs that are beyond the capacity of science to weigh. Despite Mr. Sperry's best intentions, his plan for a "single comprehensive and unifying view" of science and values leaves the two spheres, alas, irrevocably split. ■

IV-16

Duplicate

**SCIENCE AND MORAL PRIORITY**

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Columbia University Press.  
\$16.95.

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stipulate how science is to restructure our value systems. Instead Mr. Sperry is buoyed by the belief that a rigid hierarchy of moral principles will enable each principle to be rigorously determined from the ones preceding it. "Given any desired goal," he writes, "that which helps toward attainment of the goal becomes good, and that which obstructs the goal becomes bad."

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~~Revised~~ *Articles*

**Article by RWS Lab** I-1

**Article about RWS Lab**

**Article Marked by RWS**

**Article Title** The Eye and the Brain

**Article Authors** Sperry, R.W.

**Publication Name** *Scientific American*

**Volume Issue Pages** 194(5), 48-52

**Year** 1956

**Full citation** Sperry, R.W. (1956). The eye and the brain. *Scientific American* 194(5), 48-52.

**Description** Page 28 -- brief biography



Sperry, Roger W. Science and Moral Priority: the merging of mind, brain, and human values.

Columbia Univ. Pr. (Convergence) Jan 1983  
\$22.50 ed. by Ruth Nanda Anshen. ISBN 0-231-05068-5 \$19.95

# LJ REVIEW / AD SERVICE

Journal, School Library Journal

The author has recently received the Nobel Prize for his work in psychobiology. His aim in the present work is to "merge" science and values. Unfortunately, he ignores virtually everything ever written about why this (allegedly) cannot be done, and continually confuses explanation with justification and causes with reasons. He even seems unacquainted with the difference between technical and moral judgments. One example of philosophical naivete must suffice: "Given any desired goal, that which helps toward attainment of the goal becomes good . . . ." Sperry is an eminent scientist, and his opinions about matters in his own field are interesting; his philosophical comments are embarrassing.—Robert Hoffman, Philosophy Dept., York Coll., CUNY

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*Mark Abramson*  
Mark Abramson

Time/Sunday Evening  
7/27/83

Christian commitments is strenuously denied - though the strains evident at this point in Marx's thought are perhaps best treated charitably as

which materialism and Christianity are in asymmetrical relations of dependence on one another. The overall message of the book is that it is in Marxism, and

product refusal to embrace the absurdities of liberation theology, it is not too much to say that for Turner - as no doubt for many contemporary

# Moved by mind

Kathleen Lennon

ROGER SPERRY

Science and Moral Priority:  
The Merging of Mind, Brain, and Values

135pp. Oxford: Blackwell. £12.50.  
0631 13199 X

Roger Sperry is concerned in this book to argue for an integration of science with ethics; to argue, in particular, that we can turn to science to establish an ultimate and objective set of values with global application. Moreover, given that human values play such a crucial role in determining the use to which all scientific discoveries are put, he regards the search for their ultimate base as one of the most urgent tasks for science.

Professor Sperry's conviction that science has a role to play in human value theory derives, in his view, from his theory of the mind, the spelling out of which constitutes by far the most interesting part of the book. This theory is termed "mentalism" and is contrasted with both materialism and dualism. Mental phenomena, among which he includes sensations such as pain, as well as intentional states such as desires and beliefs, are, it is proposed, genuine inner states of an agent, reducible neither to patterns of behaviour, nor simply to brain states. Dualism of the kind advocated by Sir John Eccles is opposed, however, because mental states are dependent on, and in some sense constituted out of neurological states. In current terminology mental states are *supervenient* on brain states. None the less mental properties cannot be reduced to neurological properties, because they are higher level functional or organizational properties which cannot be adequately characterized if one remains at the neurological level of description. Such a non-reductive, but broadly functionalist, view of the mind is currently much debated by

psychologists and philosophers, whose attempts to equate conscious mental phenomena such as pains with higher-level functional states have so far encountered unresolved difficulties. These, however, are not considered here.

Sperry wishes to assign a genuine causal explanatory role to psychological states, considered as determinants of behaviour, thus legitimizing psychology and social sciences as genuine sciences searching for genuine causal regularities within their own mode of description:

... the higher order mental patterns and programs have their own subjective qualities and progress, operate and interact by their own causal laws and principles which are different from, and cannot be reduced to those of physiology.

Such a position raises the difficult question of how psychological causal explanations of behaviour relate to possible neuro-physiological accounts. Sperry is opposed to the dualist view that mental states at some stage "break into" the neuro-physiological processes. Rather, he suggests, the relation is one in which the overall organization of the system governs the behaviour of its constituent parts: "Mind moves matter in much the way ... a molecule governs the travel course of its own atoms, electrons, and sub-nuclear elements in a chemical reaction." He also uses the analogy of "a wheel rolling downhill, carrying its atoms and molecules through a course in time and space ... to a fate determined by the overall system properties of the wheel as a whole". The relation suggested by these interesting analogies between laws and explanations operating at different levels of description merits much further exposition; but that unfortunately, is not the main focus of the book.

How then, for Sperry, does this theory of the mind point to the integration of science and ethics? In his view it makes it legitimate for science

to regard human values as genuine determinants of human decision-making and behaviour. (This is lucky for science, as human interaction from time immemorial seems to have proceeded, pretty successfully, on just such an assumption.) As a consequence the "human value factor" becomes a subject for scientific investigation. Moreover the role of science is not to be limited to what we might anticipate from the theory of mind, namely an investigation of the ways in which values are produced, and their influence on behaviour. It is to be entrusted with uncovering ultimate values. The key question is why we should consider this to be a task for scientists. The answer which seems to be suggested is that once we have accepted that values influence the world, and vice versa, then the traditional fact/value distinction has broken down and scientists can take on the task of discovering the good. ~~But~~ such an argument is bogus. Defenders of the fact/value distinction never disputed a causal link between facts and values. They rather pointed out that this was not sufficient to establish a justificatory one. This point Sperry does not confront.

The ultimate value towards which Sperry believes science directs us is that "the grand design of nature perceived broadly in four dimensions to include the forces that move the universe and created man, with special focus on evolution in our own biosphere, is something intrinsically good that it is right to preserve and enhance and wrong to destroy or degrade". However he himself recognizes that such a characterization leads into difficulty, for "the bad things in nature are as natural as the good". To overcome this he suggests that value rests in "the trends of the creative process towards improved quality of existence". But this leaves open the question of which processes we regard as improving the quality of existence, and Sperry does nothing to convince us that the scientist is in a privileged position to answer this question.

adequately despite problems. Thus freed of our burdensome pursuit of perfection, we can live more realistically, hence more happily. *The Shrinking of America* provides a sane antidote to a pervasive myth, and its style makes it suitable for college undergraduates and general audiences. It is well researched, and the references are substantial enough for preprofessional and professional use. — *Barbara Frankel, Lehigh Univ., Bethlehem, PA*

## 170 Ethics

SPERRY, ROGER. *Science and Moral Priority: Merging Mind, Brain, and Human Values*. NY: Columbia University Press, 1983. xiv + 150pp. \$16.95. 81-24206. ISBN 0-231-05406-8. C.I.P.

C, P, GA ★★ Nobelist Roger Sperry (widely known for his "split brain" research) advocates mentalism as opposed to behaviorism, materialism, and dualism. He speculates that consciousness is inextricably tied to the living brain and that it is a causal agent in brain events. This leads him to conjecture that "subjective values" not only reflect environmental conditions but produce and control them. Sperry's account of his research, his environmental concerns, his remarks on the value implications of science, and his speculations about the power of mind over matter deserve the attention of a wide audience inside and outside the scientific community. However, readers should be wary. Sperry incorrectly attributes some ideas to Karl Marx when his target is actually Soviet Communist Party materialism; he also says nothing about cultural variability in his defense of "inherited constraints"; and he holds out the unrealistic and conservative promise that everyday personal values (for example, the sanctity of the "biologically based family") will remain untouched if we achieve the major shift in higher values that he believes our survival depends on. Despite Sperry's concerns and cautions, the inheritance arguments are not successfully secured against possible charges of racism. Also, Sperry's speculations about the mind are exciting but may be too idealistic. — *Sal Restivo, Rensselaer Polytech. Inst., Troy, NY*

## 290 Comparative Religions

APPEL, WILLA. *Cults in America: Programmed for Paradise*. NY: Holt, Rinehart and Winston, 1983. 204pp. \$15.95. 82-15538. ISBN 0-03-054836-5. Index; C.I.P.

SH, C, GA ★ In this book, the author attempts a broad overview of contemporary cults in the United States, with a backward glance at the history of such movements. She succeeds. Appel brings together a variety of data and concepts from anthropology, history, psychology, neurology, and law to address several key questions: the nature of cult leaders and their actual and potential followers; the processes of indoctrination, conversion, and control; and the problems of withdrawal, "deprogramming," and civil liberties, including the right to believe the absurd. However, contemporary cults in the United States are quite diverse—they comprise self-help groups, minor political factions, and idiosyncratic "Christian" and "Eastern" churches—so some violence is done to the data by lumping together leaders such as Marcus Garvey, Jim Jones, Lyndon LaRouche, and the Ayatollah Khomeini. Nevertheless, I recommend the book as a readable and useful introduction to a fascinating and complex subject. — *S.H. Posinsky, Jamaica, NY*

## 300 Social Sciences, Cultural Anthropology

BARASH, DAVID P. *Aging: An Exploration*. Seattle: University of Washington Press, 1983. xi + 240pp. \$14.95. 82-48868. ISBN 0-295-95993-2. Index; C.I.P.

January/February

SH, C, GA ★ This book is a comprehensive survey of several areas that comprise the territory of aging. As such, it is a good map and guidebook for those exploring the field of aging, although two chapters on rejuvenation seem to be too much for a book that attempts to cover as much ground in 240 pages as this one does. The chapter on the biology of aging is clearly written in ordinary language to describe the theories of the phenomenon of aging. It is regrettable that more space is not allotted to the psychology of aging, which is considered by many to be equally important. While some good-natured fun is poked at some of the pomposity of sociology, on the whole the chapter on the sociology of aging is thorough and accurate. The many literary and philosophical quotations become almost distracting, although it must be noted that many are, if not actually obscure, at least unfamiliar and not heretofore encountered in material on aging. — *Joan G. Benner, Prairie Village, KS*

BELL, MICHAEL J. *The World from Brown's Lounge: An Ethnography of Black Middle-Class Play*. Chicago: University of Illinois Press, 1983. xii + 191pp. \$14.95. 82-4732. ISBN 0-252-00956-8. C.I.P.

C, P ★ *The World from Brown's Lounge* is an ethnography of a black, middle-class bar in Philadelphia. The author, Michael Bell, is a white folklorist who spent a year and a half gathering data on the patterns of social interaction that he encountered there, using, for the most part, the classic anthropologic technique of participant observation. Some verbal encounters were recorded, and a few key informants were interviewed at length. Bell describes the bar's rules for conversing and such behaviors as entering and leaving, and he analyzes how members of the small, informal society of patrons creates and shares sets of expectations about appropriate social behavior. He also discusses both the methodological and the existential problems he encountered in his attempt to discover those shared expectations. Moreover, Bell describes several highly elaborated styles of verbal interaction (for example, "styling" and "profiling") and makes a good case for regarding them as folkloric performances worthy of aesthetic analysis. The writing is clear and interesting, with much less "sociologese" than is usual in works of this type. In sum, this is a good study that can be recommended to students in sociology, black studies, English, anthropology, and folklore. — *Ronald C. Simons, Michigan State Univ., East Lansing, MI*

FABIAN, JOHANNES. *Time and the Other: How Anthropology Makes Its Object*. NY: Columbia University Press, 1983. xv + 205pp. \$28.00; \$13.00 (paper). 82-19751. ISBN 0-231-05590-0; 0-231-05591-0 (paper). Index; C.I.P.

P ★ This book is a series of four essays: "Time and the Emerging Other," "Our Time, Their Time, No Time: Coevalness Denied," "Time and Writing about the Other," and "The Other and the Eye: Time and the Rhetoric of Vision." Fabian wants "to examine the past and present uses of Time as ways of construing the object [the Other] of our discipline" (p. x). Fabian's thesis is that anthropology uses time to separate itself from the peoples it studies. It denies these people "coevalness," which, in turn, lessens their humanity. Thus anthropology, sometimes unintentionally, allies itself with the forces of oppression (Western imperialism) against the very groups for which anthropology professes concern and care. This, Fabian states, is scandalous (p. 143). Fabian also states that his intent is not "summary repudiation of anthropology" (p. 152). However, many anthropologists—with some justification—will take the book as just that. Fabian urges anthropologists to be more holistic, to admit coevalness with their subjects, and to turn to language as a remedy (pp. 143–165), but his conclusions do not provide a systematic means for implementing his suggestions. This book is not suitable below the graduate level as considerable background is clearly needed by the reader. — *Jonathan E. Keyman, Illinois State Univ., Normal, IL*

FEDERICO, RONALD C., and JANET S. SCHWARTZ. *Sociology*, 3rd ed. (Illus.) Reading, MA: Addison-Wesley, 1983. xvii + 698pp. \$15.95 (paper). 82-11375. ISBN 0-201-12030-5 (paper). Glossary; Indices; C.I.P.

*Science Books & Films*

KRAFT, R. WAYNE. A REASON TO HOPE: A SYNTHESIS OF TEILHARD DE CHARDIN'S VISION AND SYSTEMS THINKING. SEASIDE, CA: INTERSYSTEMS PUBLICATIONS, 1983. 274 P. PAPERBACK: \$12.95.

A metallurgist and long-time student of theology, Professor Kraft in this volume expresses the view that systems thinking can provide a link between the secular and the sacred. The book also addresses other topics of mutual interest to scientist and theologian.

The book opens with a discussion of the concept of time in which Kraft studies the meaning of cyclical versus linear perceptions of time and finds the latter more suitable to Western theological and scientific traditions. Evolution is described as a linear process; Kraft's evolutionary model is essentially Teilhard's concept of creation by evolution. Kraft believes that evolution is divinely energized, progressive, and directional. While biological evolution is seen as a divergent process, social evolution is thought to be a gradual universal heightening of consciousness, a convergent "coming together" toward an "omega point." Thermodynamic laws suggest to Professor Kraft that the evolution of the cosmos may also be described as a gradual transformation of matter to spirit.

Systems thinking provides for Kraft a way of understanding complexity in the universe. Systems are seen to operate within a hierarchy of purposes, building toward a higher goal. Communication, described as a type of sophisticated energy form, is thought to forge inter-systemic links. The whole scheme is tied to Kraft's definition of divine love as an energy form, exhibited through appropriate actions, such as efforts to preserve world peace or avert world hunger. Clearly and optimistically written, the book is deeply-felt and deeply thought. In his introductory pages, Professor Kraft suggests that the work will be of primary interest to two types of individuals: Christians attempting to reconcile faith with science and scientists looking for a unifying principle in nature.

PARROTT, BRUCE. POLITICS AND TECHNOLOGY IN THE SOVIET UNION. CAMBRIDGE, MA: MIT PRESS, 1983. X, 428 P. BIBLIOG. \$45.00.

Parrott analyzes three aspects of the interaction of Soviet politics and technology: "The first is how technological progress has fitted into official Soviet thinking about the USSR and its relations with the rest of the world. The second is the evolution of the regime's technological strategy: the mix of foreign and domestic technology by which the regime has tried to achieve its goals, and the avenues by which it has sought to obtain technology from other countries. The third is the political and administrative dynamics of the domestic institutions through which the regime has striven to create and introduce new industrial technology" (p. 2). The volume covers the period from the first five year plan in 1928 to 1975 and the establishment of Brezhnev's major policies. Parrott's analysis is revealing of both the historical and the contemporary societal and political context of Soviet technology and offers suggestions for the West in terms of future relations with the USSR.

PRAGER, CAROL A.L. "PORTENTS OF FUTURE STUDIES." QUEEN'S QUARTERLY 90 (AUTUMN 1983): 760-67.

The methods of futures research range from mathematical trend extrapolation to free-form imaginings. Forecasting techniques have tended toward the more self-consciously scientific, the technological, and the practical partly because of the tendency of the social sciences to embrace the scientific method. Futures methodologists such as RAND's Helmer and Rescher have pointed out that scientific explanations do not always hold in the inexact sciences or lead to reliable predictions. They have advocated a prediction methodology which draws on more informal, intuitive, intrinsic expertise. Kahn and Waddington find that the disciplinary organization of universities works against not only the essential interdisciplinary nature of futures studies but also practical problem solving in general. Futures studies have an affinity with "interfaces:" between disciplines, between knowledge and action, between "is" and "ought," between pure and applied science, and between the scientist and the professional. Certain practical problems with this type of research are readily apparent. Science's "trial and error" is not always possible since man may not survive a mistake. There is a tendency of humanists to pin hopes on computers while computer experts turn to humanists to be bailed out. Forecasting techniques tend to be conservative since they are based on the continuation of forces currently at work. Two predominant continuing difficulties are observed; first, the superdiscipline of future studies is nurtured in some established discipline (social sciences). It will therefore be molded by the methods, criteria of validity, history, literature, traditions, and developing sensibilities of the field in which it resides. Secondly, it is imperative to maintain the critical, autonomous nature of futures research since, if attention shifts from what is to what can be created, opportunities for ideological distortion and the cultivation of orthodoxies increase. A thoughtful addition to reading lists in futures studies classes.

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PULOS, ARTHUR J. AMERICAN DESIGN ETHIC: INDUSTRIAL DESIGN TO 1940. CAMBRIDGE, MA: MIT PRESS, 1983. IX, 441 P. ILLUS., BIBLIOG. \$50.00.

Pulos traces the history of industrial design in America from the colonial period to the 1940s. "The United States was in all likelihood the first nation to be designed. . . . America did not just happen; it was designed," (p. vii). Drawing upon this Puritan heritage after the industrial revolution, America's "democratic" design of mass produced products may be its "unique contribution to world culture," (p. vii). An interesting combination of the history of American technology and design. Extensively illustrated with black and white prints and photographs.

SANDERS, RALPH. INTERNATIONAL DYNAMICS OF TECHNOLOGY. CONTRIBUTIONS IN POLITICAL SCIENCE, 87. WESTPORT, CT: GREENWOOD PRESS, 1983. XIII, 332 P. BIBLIOG. \$35.00.

Sanders analyzes the relationship between technological change and international politics. Changing technologies with international contexts or implications and world problems that involve technology either as cause or as a possible solution require broader understanding and study than has often been the case in previous generations. After looking at a variety of topics including technology and war, technology transfer, and political diplomacy in both the historical and contemporary periods, Sanders suggests that future technology strategies should incorporate technology forecasting, technology assessment, and technological growth curve analysis. The resulting improved understanding of the social context of technology will help guide policy makers in their decisions.

SICHEL, BERTA. "NEW HOPE FOR THE TECHNOLOGICAL SOCIETY: AN INTERVIEW WITH JACQUES ELLUL." ETC 40 (SUMMER 1983): 192-206.

Ellul sees computer technology, unlike previously developed technologies, providing a tool which can be used to change social structures. He warns that "telematique," a combination of computer technology and telecommunications, is directing man toward games. This trend is dangerous since we will play and forget to change society. It is easier for man to sit for hours in front of a television screen than to create something. Man left alone will find something he likes to do, but the organization of leisure restricts freedom. Microprocessors, Ellul suggests, offer a possibility for the decentralization of large corporations and the reducing of the workplace to human scale while maintaining efficiency. Marcuse thought the counter culture would bring about change, but Ellul sees the computer as a more effective means. However, since the enormous size of labor unions makes them incapable today of understanding the problems of society, Ellul sees movements outside the mainstream, such as the struggle against nuclear power, the peace movement, and Greenpeace, as the forces which will give corporations trouble. He ends the interview by predicting that the coming world crisis of disorder will be triggered by bankruptcies of countries and multinational corporations. He does not believe there will be nuclear war because everyone is too afraid, unless it happens by accident.

\* SPERRY, ROGER. SCIENCE AND MORAL PRIORITY: MERGING MIND, BRAIN, AND HUMAN VALUES. N.Y.: COLUMBIA UNIV. PRESS, 1983. XV, 151 P. \$16.95.

Drawing upon his scientific research in brain function, Sperry a psychobiologist, contradicts traditional views of a science-values dichotomy and argues instead that human wisdom and values are key determinants in shaping scientific inquiry and that a recognition of the need for a convergence of science and values is central to the evolution of a morally civilized society. He contends that "the prime hope for tomorrow's world lies not in outer space or improved technology, but rather in a change in the kinds of value-belief systems we live and govern by," (p. 4). At the same time "a scientific approach to both the theory and the prescription of ethical values is not only feasible, but is by far the best way to go, offering the most promising, perhaps only, visible hope for future generations," (p. 108). He concludes that, "in the context of today's mounting global problems and in the absence of population controls the relative long-term social benefits from advances in science and technology are diminished. At the same time the human value spin-offs from the mind-brain and other sciences are thrust into a strategic position of top concern because of their key role in the search for ultimate criteria for policy priorities and decision-making guidelines. Recent conceptual developments in the mind-brain sciences rejecting reductionism and mechanistic determinism on the one side, and dualism on the other, clear the way for a rational approach to the theory of values and to a natural fusion of science with ethics and religion," (p. 122).

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body of the text, although many appear later, in the lists of recommended reading.

The title of the book is a little misleading, since the major part of the material has no direct experimental relationship to behavior (beyond the general hypothesis that any function of the nervous system is somehow related to behavior). The subtitle seems hardly related to the contents.—S. J. Richards and G. Raisman, *Neurobiology, Medical Research Council, Mill Hill, London*

### Behavioral Sciences

**Science and Moral Priority: Merging Mind, Brain, and Human Values.** Roger Sperry. *Convergence*. 150 pp. Columbia University Press, 1983. \$16.95.

Sperry presents four central theses in this book. First, he argues that human values determine the course of history and that current global conditions demand a rethinking of moral priorities. The second thesis is that the methods, world view, and truths of science can and should be applied to the search for a universally accepted value system. Third is the claim that values are hierarchically ordered, so that specific moral prescriptions derive logically from a set of premises that are accepted without proof. Finally, human consciousness and its values are susceptible to scientific investigation because they are part of a single objective reality. Rather than being an epiphenomenon, consciousness is an emergent property of certain, as yet unknown, spatiotemporal patterns of neural activity that stands at the top level of a causal matrix and supersedes, regulates, and controls lower-level systems governing brain processes. Sperry argues lucidly and forcefully for his position, and regardless of the extent to which a reader accepts his ideas, the issues he raises need to be seriously considered. If the best method yet devised by man for gaining understanding cannot help in reaching a consensus on human values, we may well join those millions of species that are now extinct.—*Jerre Levy, Behavioral Sciences, University of Chicago*

**The Psychology of Human-Computer Interaction.** Stuart K. Card, Thomas P. Moran, Allen Newell. 469 pp. Lawrence Erlbaum, 1983. \$39.95.

In order to enhance computer usage, we need more adequate psychological descriptions of the user. Card, Moran, and Newell make a substantial contribution toward that goal by providing a theoretical framework, a set of methods, and several specific case studies in this domain. Although the general theoretical

approach is not new, this text provides one of the best concise descriptions of a temporally specified model of human information-processing which emphasizes minimal structural constraints and the strong influences of the task's environment on behavior.

The authors argue against the current methodological emphasis on hypothesis testing, which frequently discriminates only among limited alternatives in isolated contexts. Instead, they emphasize task analysis, quantifiable laws of parametric variation in a given environment, and the magnitude of effects rather than their statistical significance.

Text editing is the major task considered in this book (5 of 13 chapters). In their discussion, the authors provide detailed descriptions of models formulated at different levels of analysis, ranging from a unit task, such as loading some text or setting font style, to individual keystrokes.

The authors do extend their approach to other problems, but the text is not applicable to all user characteristics or computer tasks. Little attention is given to motivation of the users or their individual differences, for example, or to programming, instructional systems, or other applications. Coverage is therefore not as broad as the book's title suggests. The authors are keenly aware of these limitations, however, and have deliberately adopted the strategy of focusing on detailed analyses of a few key tasks.

This is an important text for anyone interested in understanding the role of cognitive psychology in computer design. It also serves as an excellent example of the importance of close links between theory and application in the growth of a relatively new area of scientific study.—*Marc M. Sebrechts, Psychology, Wesleyan University*

**Ancient Maya Civilization.** Norman Hammond. 337 pp. Rutgers University Press, 1982. \$27.50 cloth, \$12.95 paper.

Any author courageous enough to attempt to compress an ancient society's prehistory between the covers of a book must of necessity blend fact with personal opinion and speculation. Hammond's blend is among the best to appear in recent years, partly because it is the product of one actively engaged in fieldwork. The volume benefits greatly from the combination of a history of research with a broad outline of Maya prehistory and a series of chapters on the nature of ancient Maya life. The overall coverage is good, and the book is written with the clarity required if Maya society is to be made intelligible to the general reader.

It is probable that every Mayanist will find some statements with which he

disagrees, as I, for example, would wish to see a rather different treatment of the Central Lowlands Postclassic and of aspects of trade. Such disagreements are inherent in the study of a society as multifaceted, and in many respects still virtually unknown, as that of the Maya. Fortunately, Hammond has neatly managed to skirt a major area of disagreement by giving minimal coverage to MacNeish's sequence of Archaic "cultures" in Belize, which needs very considerable critical review before it is given further reification in print.

While the quality of the contents exceeds that of other recent summaries Maya life, the same unhappily cannot be said of the book's appearance. Gutter margins are too narrow to permit comfortable reading of the text. More serious is the depressing grayness of photographic illustrations that detract from, rather than enhance, the text. Lowering of production quality may have been a conscious decision aimed at keeping the price within bounds, but the effect is to reduce the usefulness of an otherwise well executed updating of the task of transforming excavation reports into a coherent story of the ancient Maya past.—*David M. Pendergast, New World Archaeology, Royal Ontario Museum*

**Rock Art of the Spanish Levant.** Antonio Beltran. Trans. Margaret Brown. The Imprint of Man. 91 pp. Cambridge University Press, 1982. \$19.95.

**The Dawn of European Art.** André Leroi-Gourhan. Trans. Sara Champion. The Imprint of Man. 77 pp. Cambridge University Press, 1982. \$19.95.

These are the first two books in a series on prehistoric art edited by Emmanuel Anati. The series is intended as "an introduction to regional prehistoric art for the tourist and traveler." These volumes are written by eminent scholars in their fields and illustrated by a lavish but largely unacknowledged body of color plates bound separately at the end of the book. Here their similarities end.

Leroi-Gourhan's book is most emphatically not an introductory text. The author presents a synthesis of his work on Palaeolithic art over the last decade or so, building explicitly on his earlier published work. The first part is devoted to his very perceptive analysis of the development of artistic conventions in Palaeolithic art. Reference to the stylistic phases defined by him in his earlier book can only be meaningful to those already familiar with it. The brief presentation of his interpretative analysis gives an updated, slightly modified version of his previous thesis. Although Leroi-Gourhan's interpretations have received little acceptance among his colleagues, his new approaches to the study of prehistoric art

*Science and Moral Priority: Merging Mind, Brain and Human Values.* By ROGER SPERRY. New York: Columbia University Press, 1983. 150 pages. \$16.95.

This is a collection of essays authored over the period of the last fifteen years by Nobel prize-winning neurobiologist Roger Sperry. Edited and revised for this volume, these essays bring together Sperry's views on the ethical, philosophical, and religious implications of the recent advances in the cognitive sciences. These include his own major contributions both to an understanding of how the brain inherits and develops neural networks for behavior without the aid of function and to studies of split-brain phenomena and hemispheric specializa-

tion. Sperry contends that these advances in the cognitive sciences demand radical revisions in widely accepted religious and philosophical views on the mind-body problem and the foundations of values.

Sperry argues that the soundest scientifically based position concerning the mind-body problem, though one not yet supported by direct empirical evidence, is mentalism. Mentalism is the position that conscious, subjective states play a causal role in human behavior. These states, though intrinsically dependent on brain states, are emergent organizational features of brain states. Thus, on the one hand, Sperry rejects mind-brain identity theories and reductionistic materialism, and, on the other hand, he also separates himself both from classical religious and philosophical dualistic positions as well as the contemporary dualistic position of John Eccles and Karl Popper, a position claimed by these theorists to be based on current findings in the cognitive sciences. Sperry's view then is monistic: there are no nonphysical or supernatural entities, properties, or states. However, it is also nonreductionistic in both substantive and methodological senses of that term. The mind is an emergent reality distinct from the brain and interacts with it in a causal fashion, and the laws governing conscious subjective activity are distinct from those governing lower-level activities. The former supervene on the latter, that is, although they do not normally intervene or contradict the laws at lower levels, they do determine the overall activity of the person and thereby specify and direct lower-level laws. Thus Sperry holds for a nondualistic interactionism.

Sperry sketches this position in several chapters of this volume, but most completely in chapter 6, "Mind-Brain Interaction: Mentalism, Yes; Dualism, No," in which he recounts his own gradual turning from a reductionistic mind-brain identity theory to his theory of mentalism. Here also he separates himself from both the dualism of Eccles and Popper and the double aspect theory of Donald Mackay. Sperry's position rests on two interconnected key premises: first, the causal role of conscious states in human behavior and, second, the conceptualization of the subjective conscious states as an emergent level of reality. Although the first premise is an almost indubitable conviction of common sense and an a priori truth of the nonscientific traditions in Anglo-American linguistic and continental phenomenological traditions in philosophy, it has been rejected by behavioristically oriented scientists and philosophers. But the work of Sperry and others in neuroscience, advances in cognitive psychology, including cognitive behavioral psychology and research in artificial intelligence and cognitive simulation have given major scientific support to the hypothesis that conscious states have a causal role. The second premise concerns the standing of consciousness as an emergent reality. The case is much harder to make for this premise and although I am in fundamental agreement with Sperry and the emergentist position, I believe that much work still needs to be done both in clearly conceptualizing the emergentist position and supporting it. For an important attempt to do this I recommend highly William Wimsatt's sympathetic and penetrating analysis of Sperry's views in his essay, "Reductionism, Levels of Organization, and the Mind-Body Problems" (in *Consciousness and the Brain*, ed. G. Globus, C. Maxwell, and I. Savodnik [New York: Plenum, 1976], pp. 205-67). Sperry bases his position in a large measure on an analogical argument. He contends that consciousness is an emergent property of brain functioning in the same fashion as molecules are emergent relative to atoms, cells to molecules, tissues to cells, and organs to tissues. In each instance the emergent reality with its properties determines in some degree the activities of its parts. Each level has its own properties and

activities and there are lawful intralevel and interlevel activities. I find this argument attractive, and I believe that some good clues for understanding consciousness as an emergent property are to be found in examining other cases of emergence. But, as it stands, it is more of an argument sketch and a heuristic program than a completed position. I believe that Sperry would agree with this assessment.

Sperry also contends that mentalism has profound repercussions for value theory. For if the theory that conscious thought has a function in behavior is correct, then we must conclude that the cognitive sciences have an important role to play in the identification, specification, and understanding of the role of values in human behavior. Indeed, it is now possible to speak of a science of values (p. 13). Although he does not discuss their views, here Sperry is taking the side of two other very prominent scientists of our day, the behaviorist, B. F. Skinner, and the sociobiologist, Edward O. Wilson, in arguing that the dichotomy between fact and value is a false one and that we can no longer refrain from using our best cognitive tool, science, in the solution of our contemporary crises in values. Sperry, however, attempts to establish this intersection between science and values in a somewhat different fashion than Skinner and Wilson. A distinction developed by the noted biologist Ernst Mayr, among others, may be helpful here in understanding this difference. Mayr has argued that there are two major streams in biological thought: the functional and the evolutionary. The latter attempts to answer why-type questions and deals with ultimate causation. The former focuses on how-type questions and deals with proximate causation. (See Mayr's *The Growth of Biological Thought: Diversity, Evolution and Inheritance* [Cambridge, Mass.: Harvard Univ. Press, 1982].) Skinner and Wilson have urged that behavioral psychology and sociobiology respectively can provide information about and understanding of human values because each in its own way describes and explains what is valuable for members of the human species and explains why these values are valuable. Behavioral psychology does so in terms of its identification of reinforcers and sociobiology in terms of the genetically based motivators of human behavior. And although Skinner has stressed strongly the prominence of environmental factors in behavior, a synthesis of the Skinnerian and Wilsonian positions is not, I believe, hard to envision especially since Skinner himself appeals to evolutionary theory as an ultimate explanation of why reinforcers are reinforcing. (See, for instance, Skinner's *Beyond Freedom and Dignity* [New York: Bantam Books, 1972], p. 99.) Sperry's notion of a science of values complements those of Skinner and Wilson. It is, to use Mayr's distinction, a functional science of values. For Sperry is interested in how values as subjective conscious states play a causal role in determining human behavior. Thus there is, I believe, broad agreement among these eminent scientists that science, in particular biology and psychology, can make substantive contributions to our knowledge and understanding of values and that the methodology of science is an appropriate one for the investigation of ethical problems, and especially for laying the foundations for ethics and value theory. It is no news to readers of *Zygon* that this is a controversial position. Despite the genuine philosophical problems with this position to which Sperry perhaps gives too short a shrift, I am in fundamental agreement with it and believe Sperry's essays in this volume add further support for it.

But there are also other important differences, besides the functional-evolutionary one, between Sperry's position and those of Wilson and Skinner that help bring out the distinctiveness of Sperry's views. I shall mention just

three, two related to Skinner and one to Wilson. First, Sperry's, of course, very critical of the behaviorist position because it denies a causal role for thought in human behavior and makes thought epiphenomenal. In this connection let me point out parenthetically that the work of the cognitive behavioral psychologists gives some positive indication that a liberalized behaviorist approach that includes a causal role for thought can be integrated with Sperry's mentalism. However, since Sperry identifies values with subjective states of human persons, he believes that the behaviorists not only deny a causal role for thought in behavior but must necessarily lack any account of values. However, this conclusion does not follow. Skinner identifies values with primary and secondary reinforcers and these latter with such objective factors as persons, situations, objects, and activities. And these objective, environmentally situated values can be correlated with the subjective values with which Sperry is concerned. Indeed Sperry on several occasions makes a similar distinction between external and internal value constraints (for instance, p. 70). Thus I believe that Skinner's and Sperry's positions complement and reinforce one another. Indeed, I contend that the evolutionary approach implicit in Skinner and explicit in Wilson must be added to Sperry's functional account for without it the crucial teleological dimension needed in a naturalistic ethics of the sort that Sperry is supporting fails. Put too succinctly, the functional account which Sperry has in mind can explain at most only how what an agent considers or finds valuable influences her behavior, but not why such values are valuable. The teleological approach can explain why such values are valuable in the sense that it gives an account of why they promote the well-functioning of the agent as a human organism or the well-functioning of the community to which she belongs.

A second difference between Sperry and Skinner also derives from their differences on mentalism. Although both Sperry and Skinner believe that the crisis of our times is fundamentally one of values and that the solution of such problems as overpopulation, environmental degradation, poverty, and the nuclear arms race depend upon a solution to this values crisis, their differing perspectives on values and the causal role of thought in human behavior lead to quite different conceptions of the means by which a science of values can function in the solution of the values crisis. Skinner calls for a technology of behavior based on a science of values. Thus he believes that we must learn, both individually and collectively, how to structure the secondary reinforcers that influence our daily activities so that these activities lead us step by step to the solution of our major social problems. Skinner's position calls for personal and collective self-management based on learned behavioral skills which incorporate the values identified by a science of values. Sperry's approach on the other hand is much more rationalistic. Indeed, he believes that a change in values alone is the key from which a solution to our problems will flow. "It might be added that any attempt to attack directly the overt symptoms of our global condition—pollution, poverty, aggression, overpopulation, and so on—can hardly succeed until the requisite changes are first achieved in the underlying human values involved. Once the subjective value factor has been adjusted, corrections will follow readily in the more concrete features of the system" (p. 10). And, he claims, "simple logic says that future alterations in this single factor [the subjective value factor] alone could spell the difference between utopia and social disaster" (p. 11). These changes, Sperry believes, demand first of all an alteration in world views from either an other-worldly religious view of persons and nature or from a reductionistic, deterministic picture to a humanistic and naturalistic conception that understands persons to be free

agents and important but subordinate actors in nature and the universe. Such a shift in world view, based on newly emerging scientific conceptions, including Sperry's own emergentist mentalism will, he believes, lead to the adoption of appropriate ethical principles. These will function in the manner of basic axioms from which subordinate value principles and norms can be deduced. The result will be actions that are supportive in the long run of the creative trends in the evolutionary and cosmic processes (pp. 75-76). In other words, Sperry stresses changes in our evaluative thinking and Skinner changes in our value-laden environment. Cognitive behavioral psychologists are now providing scientific evidence that these alternatives are not exclusive. But, if I read them correctly, they are suggesting that the changes in both behavior and values, required by both approaches, will result from informed practice rather than from a change in thinking alone. How and what we value is not primarily a function of thinking but of acting.

A third difference between Sperry's functionalist account of values and the evolutionary approaches of Skinner and Wilson relates primarily to Wilson and the content and source of basic values. The three cardinal values proposed by Wilson in *On Human Nature* (Cambridge, Mass.: Harvard Univ. Press, 1978) are, first, the preservation of the common human gene pool, second, the maintenance of diversity in the human gene pool, and third, universal human rights. According to Wilson these values are based in our biological nature and are discovered and explained, in part, by the biological sciences. Although Sperry recognizes the existence of a biologically based set of common values among humans, these are, in his view, related to our animalistic nature and are not his primary concern. He is interested in what he calls cognitive values, our higher aspirations which he believes are closely linked to our conceptions of the ultimate meaning of human life and of the universe. Thus he finds both sociobiological and Marxist scientific accounts of values to be limited and ultimately inadequate because they are based on reductionistic materialist views of persons. Although I believe Sperry's understanding of both Karl Marx and the sociobiologists is flawed, let me pursue only the comparison with Wilson. Sperry proposes as a tentative basic ethical principle the following: "What is good, right, or to be valued morally . . . [is] that which is in harmony with, sustains, or enhances the orderly design of evolving nature including its human apex" (p. 50). Thus, according to Sperry, "The 'highest good' becomes expressed in terms of fitting in and contributing to the grand design of the creative process, i.e., furthering the progressive overall improvement in the diversity, meaning and quality of existence" (p. 56). Sperry's definition of the good is evolutionary in a broader sense than Wilson's cardinal values since it concerns evolutionary processes as a whole and presupposes both that they have a direction and that that direction can be discerned. Wilson, on the other hand, conceives of values as more narrowly based on the maintenance and promotion of the human species. I suspect that Sperry is correct and that some broader principles than those proposed by Wilson are necessary if we are going to solve the environmental problems with which we are faced in such a way that both animate and inanimate nature is respected. But such a principle as Sperry's is much more difficult to defend scientifically than Wilson's, and indeed Sperry offers no satisfactory defense for it.

A number of consequences flow from Sperry's mentalism and science of values. I shall mention and comment briefly on two. First, science can now be reconciled with a humanistic perspective, and also there is now a possibility for a new harmony between religion and science. The first consequence rests on

the new perspective on persons deriving from the results of the cognitive sciences, in particular, the important causal role attributed to subjective consciousness in human behavior. Thus the humanistic emphasis on the importance of thought, feeling, emotion, and freedom is reaffirmed. I believe this new coincidence in humanistic and scientific views of human persons is, indeed, in part a consequence of the new results in the cognitive sciences and worth noting. However, the reconciliation will not be as easily attained as Sperry might think for there seem to be fundamental differences in humanistic and scientific methodologies that will need explanation if we are to have an adequate understanding of the fundamental unity of human cognitive capacities and endeavors. Also, it is not clear to me that our ordinary, nonscientific conceptions of human thought, emotion, feeling, and freedom and their humanistic refinements will be saved *in toto*. For instance, the notion of freedom implicit in Sperry's account is that of soft determinism. Such a conception of freedom is not completely identical with the common sense or humanistic conceptions of freedom.

A second major consequence of mentalism and a science of values is the opportunity for establishing a new harmony between religion and science. This harmony is possible not merely because the cognitive sciences offer a conception of persons as thinking, free agents and promote a science of values in large part, according to Sperry, in agreement with traditional religious values but also because the new, scientifically based world view demands some conception of the transcendent. Such a conception will embody a new understanding of the sacred that embraces all the forces operative in the universe including human thought. Sperry contends that the direction of these creative forces calls for our ultimate respect and concern. I think Sperry is correct in his assessment of a need for some conception of the transcendent to supplement mentalism and a science of values, but I believe he is overly optimistic in his estimation that this new scientific world view can be in large part reconciled with traditional religious conceptions. For, as he recognizes, it demands among other things the abandoning of the classic western conception of God and the otherworldly conceptions of the human person common to both east and west. In large degree such changes are not a reconciliation with traditional religion but its replacement with a new religious perspective. On the other hand, I am not convinced that Sperry pushes the religious implications of his view of the creative cosmic processes as much as he might. Why should we not expect higher levels of emergence than the unities typified, for example, by human persons? I am far from arguing that scientific support can be given for the existence or coming to be of such higher unities, but it is not clear to me why Sperry cuts off his conception of the transcendent with what appears to be a diversity of distinct cosmic forces rather than envisioning higher level unities or indeed a single cosmic unity.

There is much more that is worthwhile in this slim volume. Sperry's work fosters a kind of dialogue between scientists, philosophers, theologians, and interested lay persons that is extremely important these days. It is open, exploratory and extremely stimulating. I would hope that the publishers of this volume would see fit to bring out an inexpensive paperback edition. It deserves wide circulation.

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**Helhetssynen:**

**Mänsklighetens räddning  
evolutionens yttersta mål**

ROGER SPERRY: Science and Moral Priority. Merging Mind, Brain and Human Values. 151 sidor. New York: Columbia University Press 1983. Pris: ca 225 kr. ISBN 0-231-05406-8.

Recensent: Björn Liedén allmänläkare, Blomstermåla.

Den helhetssyende, holistiska medicinen vinner alltmer intresse. Senator Edward Kennedy skriver i förordet till boken »Health for the Whole Person, the Complete Guide to Holistic Medicine» att boken »tells us a good deal about why our present health care system is not adequate to meet the needs of the American people, and better yet, it tells us some of the directions we might pursue to improve our health. It shows us that we have lost sight of the capacity of the family, the culture, and the society to produce and relieve individual illness.» Han säger vidare om boken: »I hope it will be only one of many attempts to bridge the gap between physical and mental illness, to promote a more holistic approach to the health of our nation.»

En mycket känd företrädare för holismen är den nobelprisbelönte hjärnforskaren Roger Sperry, och det finns alla skäl att lyssna på honom. Sperry har en mycket långvarig, ja, 30 år lång vardagsvis bekantskap med den snabbt växande kunskapen om hjärnhalvornas olika innehåll, har alltså ett tidsperspektiv på den nya kunskap som de flesta av oss saknar och har därmed kunnat ruva fram mycket långtgående slutsatser utifrån denna nya kunskap. Detta gör att han nu bejakar en helt ny världsbild, ett helt nytt synsätt.

Den nya kunskapen ledde fram till att Roger Sperry 1964 övergav »materialismen» till förmån för »mentalismen». Han gjorde det, då han inte kunde acceptera den mekanistiska, materialistiska, behavioristiska, fatalistiska, reduktionistiska synen på människan, en uppfattning som alltjämt är nästan allenarådande. Han talar om det nya paradigmet sålunda: »... the new holist-mentalistic paradigm, which has an entirely 'new look' and stands for something, that is no longer in conflict with ethical, religious, or other humanist sensitivities.»

Bokens olika kapitel är skrivna under en tidsperiod av ungefär 15 år. Det är en sammanställning av föredrag, som han hållit i olika sammanhang och inför olika auditorier, och den kan därför uppfattas som varianter på det grundläggande tema som han hela tiden förfäktar, nämligen att man numera kan och måste inta en helt ny inställning till möjligheten att syntetisera den vetenskapliga och den humanistiska världen.

Själv säger Sperry att han skrivit denna bok, då han var driven av »the overwhelming importance of bringing to general awareness an understanding of these new developments and what they mean».

Sperry är i den vetenskapliga världen en mycket erkänd forskare, som i Amerika och i världen för övrigt rönt stor uppmärksamhet långt innan han fick det svenska nobelpriset. Han är hedersmedlem i en rad olika akademier och har blivit hedersprofessor vid en rad olika universitet. Han hade innan han fick nobelpriset mottagit många utmärkelser och belöningar, bl a Albert Lasker-priset, det högsta pris som ges inom den amerikanska medicinska vetenskapen.

**Sperrys arbeten mycket viktiga**

Sperrys upptäckter är av nära nog revolutionerande natur. Förordsförfattaren skriver: »The contributions of Sperry to the conceptualization of mind and brain require change in the basic philosophy of science itself.» Den vetenskaplige redaktören för den välrenommerade tidningen New York Times recenserade Sperry sålunda: »Roger Sperry, a brilliant scientist, whose work has generated new and much deeper understanding of the brain, is also an analyst of the nature of ethical values. His eloquence and insights in both realms are particularly needed now, that the neural brain is clearly becoming the single most decisive factor for future survival of all life on earth.»

Men är nu inte detta att överdriva? Kan Roger Sperrys forskning verkligen vara så betydelsefull? Är hans undersökningsresultat så accepterade? Förordsförfattaren skriver: »Few brain scientists, however, have attempted to counter Sperry's proposals, which after all imply a major shift in neuro-biological thinking.» Han påpekar också att Sperrys tänkande fått betydelse långt utanför de medicinska kretsarna på ett sätt som är mycket ovanligt för en nobelpristagare. Intresset för medvetandet, hjärnan och för våra värderingar har efter Sperrys upptäckter alltmer blivit föremål för het debatt i facktidskrifter inom filosofin, psykologin, hjärnforskningen och även inom religionen.

**Västerlandet »vänsterhjärnigt»**

Enligt Sperry är västerlandet i alltför hög grad vänsterhjärnedominerat. Han skriver: »Our educational system and modern society generally discriminates against one whole half of the brain . . . the non-verbal, nonmathematical, minor hemisphere . . . In our present school system the minor hemisphere of the brain gets only the barest minimum of formal training, essentially nothing compared to the things that we do to train the left, or major, hemisphere.» Detta är ett viktigt påstående, för det innebär att om man gör studier på s k normala människor för att komplettera den bild som Sperry fick fram när man gjorde studier på individer som fått hjärnhalvorna kirurgiskt åtskilda kommer man att göra studier på människor som i hög grad har fått en obalanserad, oharmonisk träning av sin hjärna med åtföljande själsliga »asymmetri».

**Vetenskapens trovärdighet i sjunkande**

Sperry påstår att vetenskapens trovärdighet är i sjunkande. Detta syns bl a på att man har allt svårare att få pengar till olika forskningsprojekt, och detta skulle enligt Sperry bero på att vetenskapen håller på att förlora något av sin gamla trovärdighet. Genom att ständigt underlätta att ta fatt i viktiga problemställningar, som har betydelse för människornas livskvalitet, tar man sakta men säkert på sitt eget förtroendekapital. Att man gör detta beror på »mainly errors of reductionism». Specialiseringen har alltså lett till en olycklig uppdelning och reduktionistisk människoupfattning.

**Holismen — ett nytt paradim**

Vi står nu enligt Sperry inför en helt ny världsbild, ett helt nytt sätt att se. Han skriver: »What is new today is the shift in science from reductive physicalism to a holist-mentalistic paradigm and the change in interpretations and perspectives, that this brings.» Han anser att just hans egen forskning leder fram till ett sådant nytt synsätt. Han skriver: »The recent changes within mind-brain science have fundamentally transformed what science contributes to a union between science, ethics and religion.»

Detta budskap upprepas gång på gång i bokens olika kapitel och hör till dess mest centrala tankar. För Roger Sperry är den fria viljan en hjärnfysiologisk självklarhet. Men det faktum att han tror att psyket är överordnat hjärnan får honom inte att tro på en extra-sensorisk perception eller ett liv efter döden.

**Helhetssynen — utvecklingens yttersta mål**

Sperry påstår faktiskt att helhetssynen på sitt sätt är evolutionens yttersta mål. Han ser utvecklingen som en kedja från de allra innersta subnukleära skeendena i atomkärnan till mycket höga och komplicerade funktioner hos människan. I det perspektivet blir just människans högsta nivåer, hennes förmåga att vara levande inte bara tankemässigt utan också känslolov och upplevelsemässigt, att ha aktiva och levande värderingar på sitt sätt utvecklingens yttersta mål.

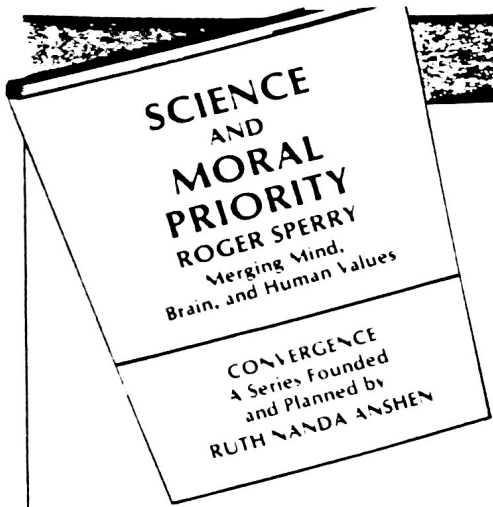
**Helhetssynen — mänsklighetens räddning**

Sperry understryker att jordens öde är synonymt med människans. Därför är just denna nya kunskap om hjärnfysiologiska korrelat till människans värderingar oerhört viktiga för hela jordens fortsatta existens. Han skriver: »The prime hope for tomorrow's world lies not in outer space or improved technology, but rather in a change in the kinds of value-belief systems we live and govern by.»

I bokens förord jämförs Sperry med Einstein och Darwin, många kommer kanske att tycka att detta är en våldsamt överdrift. Men att hans bok är av yttersta vikt tror jag många kan hålla med om.

Björn Liedén

# BOOK REVIEW



## Nobel Laureate Roger Sperry Wants an Updated Value System

If the Noetics Institute needs confirmation of its direction (which it doesn't) it comes from a just-released book by Dr. Roger Sperry, a Nobel laureate at Cal Tech. In 1981 Sperry won the Nobel prize in Medicine and Physiology for "providing insight into the inner world of the brain which hitherto has been almost completely hidden from us." His work on the surgically-split brain had led him to directly confront the creative force of consciousness.

Now Roger Sperry has gone a step further.

A giant step.

In a new book, *Science and Moral Priority* (Columbia University Press) Sperry joins that growing group of scientists who feel that the human brain is moving into a central role in the development of the planet. Says he:

"Almost the entire fabric of the earth's surface, from the atomic to the scenic level, is rapidly becoming subject to disassembly and resynthesis along new patterns of human design. In all this human-directed supervision, the potential for utopian advancement throughout the globe seems endless. It is important that these utopian potentialities be recognized."

But he sees a problem.

"While man has been acquiring new, almost godlike powers

of control over nature, he has continued to wield that same power with a relatively short-sighted, most ungodlike set of values, rooted on the one hand, in outdated biologic hangovers from evolution in the Stone Age, and on the other, in various mythologies and ideologies based on little more than faith, fantasy, wishful thinking, altered mental states and intuition.

"The obvious recommendation is to shape up our value systems to something more in tune with present-day reality, more properly suited to the new powers man now commands and the new problems we now face. It might be added that any attempt to attack directly the overt symptoms of our global condition — pollution, poverty, aggression, overpopulation, and so on — can hardly succeed until the requisite changes are first achieved in the underlying human values involved. Once the subjective value factor has been adjusted, corrections will follow readily in the more concrete features of the system."

Here are further quotes from Sperry's book:

"In my own hypothetical brain model, conscious awareness rates an important place in the chain of control... Mind and consciousness are put in the driver's seat; they give the orders ... and they push and pull around the physiological and physical and chemical processes — as much as, or more than, the

latter processes direct them."

"(My) scheme puts mind over matter, not outside or beside it. It is a scheme that idealizes ideas and ideals... It is the brain model in which conscious mental psychic forces are recognized to be the crowning achievement of some five hundred million years or more of evolution."

"Our educational system and modern society generally (with its heavy emphasis on communication and on early training in the three R's) discriminates against one whole half of the brain. I refer, of course, to the nonverbal, nonmathematical, minor hemisphere, which we find has its own perceptual, mechanical and systial mode of apprehension and reasoning."

"Our (new) understanding of cerebral substrate could make for a comeback of the 'strong silent man' of pioneer time — an image that is much submerged in our present-day verbal society."

"We can say in summary that it is possible to see today an objective explanatory model of brain function that neither contradicts nor degrades but rather affirms age-old humanist values, ideals and meaning... For those who like to receive a take-home message, that of the present is quite simple, applying to scientist and humanist alike: Never underestimate an ideal."

"The prime hope for tomorrow's world lies... in a change in the kinds of value-belief systems we live and govern by."