

ioral scientists. *American Psychologist*, 39, 840-850.

Toulmin, S. (1979, August). The cult of empiricism in psychology. In P. F. Secord (Chair), *Psychology and philosophy*: Symposium conducted at the meeting of the American Psychological Association, New York City.

The Importance of Popper's Theories to Psychology

Rafe Champion

New South Wales, Australia

The problem of "Psychology's Two Cultures" is described by Kimble (August 1984), who found evidence for the existence of "scientific" and "humanistic" cultures within the profession, measured by individual responses on a number of questions designed to force choices between various methods of approach.

This division, like that between Snow's (1964) "two cultures," the sciences and the humanities, is an artifact produced by a false theory of scientific knowledge. This theory assumes that knowledge grows by a process labeled *induction*, which involves either the accumulation of facts or the formulation of statements about laws after the repeated observation of regularities in the world.

The effects of this theory linger on, although it is commonly accepted that the notion of incremental growth based on observations was destroyed by T. S. Kuhn's (1962) historical research. In fact, the theory of induction and the whole program of the Vienna Circle of logical positivists were destroyed by Karl Popper (1934, 1959).

Popper proposed a theory of conjectural objective knowledge that grows by a process of trial and error, controlled by imaginative criticism and empirical tests. This theory disposes of all the "conflicts" postulated by Kimble and by C. P. Snow (1964). Consider the dimension *observation v. intuition*. This dichotomy can be resolved by realizing that there are numerous sources of knowledge (tradition, observation, imagination, mathematical and logical deduction from premises) but that none of these provides anything like a certain base or a criterion of truth.

Regarding the setting of discovery, posed as a dichotomy between field and laboratory, the type of tests or observations that are planned should depend

on the theories under investigation. Some theories are best tested in the field; others are best or most easily tested indoors. This is not a conflict; it is simply a matter of using different tools to do different jobs.

When Popper's ideas are understood, there can indeed be an epistemic armistice between the two cultures, although both sides will need to modify some assumptions that they currently share. Because they are shared, they are not subjected to criticism and are probably not even noticed. An example of such an assumption is the theory that we should look for a secure or certain *basis* for our knowledge (for criticisms of this, see the introduction to Popper, 1963; and Bartley, 1964, 1982).

Krasner and Houts (1984) studied a group of behavior modificationists and a control group, using questionnaires to force responses on a number of variables under three headings: *theoretical orientation* (e.g., factual v. theoretical orientation and determinism), *epistemological style* (empiricism, rationalism, and metaphorism), and *values* (having to do with politics, religion, and life-style).

Systematic differences turned up between the two groups on the methodological and epistemological variables but not on the dimension of values. Despite this result, the authors suggested that psychology is not value free. This notion is difficult to support if a distinction is drawn between two types of theories that are not testable. These are usually confused, especially by people who assume that a statement must be either a matter of fact or a matter of value. However, a distinction can be made between theories of method and theories of value.

Theories of method are components of what Popper (1976, 1982b) called the "metaphysical research programme." These programs consist of clusters of ideas, seldom clearly articulated or subjected to critical discussion, that regulate the formulation of problems and dictate the type of answers that are sought. Among the ideas in these programs are theories about determinism, reductionism, and epistemology. This is the area of *theoretical orientation* and *epistemological stance* in which Krasner and Houts found interesting and important differences between their groups.

Theories of value are quite distinct from the theories of method and

epistemology in the metaphysical research program. Moral values can guide the selection of research projects and certainly should regulate the application of findings. Important as they are (for scientists as for everyone else), these values have no logical place in the structure of descriptive theories. In this area of genuine moral and political values, Krasner and Houts found no systematic differences between their two groups. Similarly, they found only weak relationships between values and the other variables.

So far as moral values and the social responsibilities of psychologists are concerned, scientists have special moral responsibilities just to the extent that they have either special knowledge or special power (Popper, 1969).

Modern science, including psychology, is dominated by research programs containing the theories of learning by induction, subjectivism, reductionism, and determinism. Popper (1972, 1982a, 1982b, 1983; Popper & Eccles, 1977) has argued that these should be replaced by the method of "conjecture and refutation," and by the theories of objective knowledge, emergence and nondeterminism.

Most critiques of traditional empiricist methods depend heavily on flogging the dead horse of logical positivism, a beast that should have been defunct from the time of Popper's criticism in the early 1930s. Unfortunately, this criticism has not yet been fully appreciated either by positivists or by their critics.

Even after Kimble's (1984) problems of method and the issues of values are sorted out, psychology still has some deep theoretical dilemmas to consider. The practical aspect of the situation is expressed by Bruner (1983), who lamented that psychology, which should have so much to say about human behavior, in fact has hardly made an impact on the commonsense life of ordinary people, or on matters of jurisprudence, economics, or social policy. Chomsky (1974) posed the conceptual problem:

One might ask the question whether physical science as known today, including biology, incorporates within itself the principles and the concepts that will enable it to give an account of innate human intellectual capacities and, even more profoundly, of the capacity to make use of those capacities under conditions of freedom in the way which humans do. I see no particular reason to

believe that biology or physics now contain those concepts, and it may be that to scale the next peak, to make the next step, they will have to focus on this organizing concept, and may very well have to broaden their scope in order to come to grips with it. (p. 142)

I conjecture that the next step has indeed been taken by Popper (Popper & Eccles, 1974), with his theory of objective knowledge, which can be used to unify psychology and sociology and to bring a renewed sense of purpose into the methods of the social sciences and humanities at large.

The theory of objective knowledge looks absurd, but we should have learned from the history of science that this is precisely how an important new idea should look. Who could possibly take objectivity seriously after quantum theory, the sociology of knowledge, and T. S. Kuhn?

The theory states that objective knowledge consists of the information content of brains, thoughts, spoken communications, and books, which cannot be totally reduced to physical or subjective terms. An authority in artificial intelligence described this form of knowledge as "semantic information, which is information about meaning and about the 'aboutness' of what's being carried in some informational channel" (Dennett, 1983, p. 72). He added that this idea of information is still not very well formulated, which is not surprising because materialist theories of mind and subjective theories of knowledge do not acknowledge that such information exists.

It may be protested that positivists and empiricists have always believed in objectivity, but on closer inspection it turns out that their theory of objectivity is a quality of mind (essentially being unbiased, open to experience, free from assumptions, etc.). In fact, the classical empiricism of Locke, Hume, and Russell is as subjective as the intuitionism or rationalism of Descartes and the modern phenomenologists. According to both the empiricists and the rationalists, knowledge grows in individual minds and is a matter of belief. They differ on the grounds of justified belief (facts vs. intuition). But Popper and Bartley have rejected the premise that we should be seeking justified belief; instead, we should look for conjectures that stand up to criticism.

This may be regarded as merely a

verbal difference or a slight shift of emphasis, but when the contents of Popper's theories are unpacked in relation to the perennial problems of knowledge and values, the impact is dramatic, as indicated by Manicas and Secord (1983), who were on the right track even though they had not acknowledged the original pathfinder.

Popper's ideas have suffered severely from a series of misleading myths. In 1934, with *Logik der Forschung*, Popper destroyed the program of logical positivism but, due to a serious misunderstanding of his intentions and subsequent misreading of the book, positivism lingered on for decades, and books are still being written about the movement, called logical empiricism in the United States, without mention of Popper. The chief preoccupation of the positivists was to formulate a principle to define meaningful statements and to banish metaphysics, which were branded meaningless. Popper's problem was to draw a line of demarcation between empirical science and other areas of discourse such as pseudoscience, and incidentally metaphysics. His criterion of demarcation was empirical falsifiability (logically straightforward although always problematic in practice due to the theory dependence of statements of fact). The positivists and their critics chose to interpret this criterion as an attempt to solve the problem of meaning, a problem that never concerned Popper. This misunderstanding obscured the real significance of his work for some decades.

Popper's first book in English was his war effort, written in New Zealand after he fled his native Austria in 1937. *The Open Society and Its Enemies* (1945) criticized certain aspects of Plato, Aristotle, Hegel, and Marx. The criticism of Aristotle made the book almost impossible to publish in the United States, the criticism of Plato scandalized scholars brought up to regard Plato as the "divine philosopher," and the criticism of Marx (although sympathetic) has denied Popper an open-minded readership among the Left ever since.

After the war, his work (like Bertrand Russell's) was largely ignored at Oxford, Cambridge, and many other places due to the vogue of linguistic analysis stimulated by Wittgenstein in his second phase.

In 1959 the English translation of

Logik der Forschung appeared, but the book was expensive and slow to circulate. Its message was swamped by the popular impact of Kuhn's *The Structure of Scientific Revolutions* (1962). It is widely believed that Kuhn showed that traditional scientific method (including Popper's) would not work because facts have to be interpreted in the light of theories. This is precisely the problem that Popper had identified and solved several decades earlier.

During the 1950s Popper wrote almost a thousand pages of manuscript to appear as a companion volume to *Logik der Forschung*, but due to illness and other problems this material only appeared recently (1982a, 1982b, 1983), rescued from the threat of oblivion by William W. Bartley III, who took charge of the final editing. *Quantum Theory and the Schism in Physics* (Popper, 1982b) contains the theory of "metaphysical research programs," which provides a key to the systematic nature of Popper's ideas on science and society. The manuscript circulated among students and colleagues at the London School of Economics, among them some who became outspoken critics of Popper's ideas. The belated publication of this manuscript shows the extent to which critics such as Lakatos and Feyerabend are in debt to Popper. These books also show that the critics never really damaged Popper's arguments, though the opinion that Popper has been totally superseded by Lakatos, Kuhn, and Feyerabend, and lately by Bhaskar, has become virtually universal among social scientists.

REFERENCES

- Bartley, W. W., III. (1964). Rationality versus the theory of rationality. In M. Bunge (Ed.), *The critical approach to science and philosophy* (pp. 3-31). London: Free Press of Glencoe.
- Bartley, W. W., III. (1982). The philosophy of Karl Popper: Part III. Rationality, criticism and logic. *Philosophia*, 11, 121-221.
- Bruner, J. (1983). The growth of cognitive psychology: Developmental psychology. In J. Miller (Ed.), *States of mind: Conversations with psychological investigators* (pp. 30-41). London: British Broadcasting Corporation.
- Chomsky, N. (1974). Human nature: Justice versus power. In F. Elders (Ed.), *Reflexive water: The basic concerns of mankind* (pp. 133-197). London: Souvenir Press.
- Dennett, D. (1983). Artificial intelligence and the strategies of psychological investigation. In J. Miller (Ed.), *States of mind: Conversations with psychological inves-*

- tigators (pp. 66-80). London: British Broadcasting Corporation.
- Kimble, G. K. (1984). Psychology's two cultures. *American Psychologist*, 39, 833-839.
- Krasner, L., & Houts, A. C. (1984). A study of the "value" systems of behavioral scientists. *American Psychologist*, 39, 840-850.
- Kuhn, T. (1962). *The structure of scientific revolutions*. Chicago: University of Chicago Press.
- Manicas, P. T., & Secord, P. F. (1983). Implications for psychology of the new philosophy of science. *American Psychologist*, 38, 399-413.
- Popper, K. R. (1934). *Logik der forschung*. Vienna: Springer.
- Popper, K. R. (1945). *The open society and its enemies*. London: George Routledge & Sons.
- Popper, K. R. (1959). *The logic of scientific discovery*. New York: Basic Books.
- Popper, K. R. (1963). *Conjectures and refutations: The growth of scientific knowledge*. London: Routledge & Kegan Paul.
- Popper, K. R. (1969, March). The moral responsibility of the scientist. *Encounter*, pp. 52-57.
- Popper, K. R. (1972). *Objective knowledge: An evolutionary approach*. Oxford: Clarendon Press.
- Popper, K. R. (1976). *Unended quest: An intellectual autobiography*. La Salle, IL: Open Court.
- Popper, K. R. (1982a). *The open universe: An argument for indeterminism* (W. W. Bartley III, Ed.). London: Hutchinson.
- Popper, K. R. (1982b). *Quantum theory and the schism in physics* (W. W. Bartley III, Ed.). London: Hutchinson.
- Popper, K. R. (1983). *Realism and the aim of science* (W. W. Bartley III, Ed.). London: Hutchinson.
- Popper, K. R., & Eccles, J. C. (1974). Falsifiability and freedom. In F. Elders (Ed.), *Reflexive water: The basic concerns of mankind* (pp. 71-131). London: Souvenir Press.
- Popper, K. R., & Eccles, J. C. (1977). *The self and its brain: An argument for interactionism*. New York: Springer.
- Snow, C. P. (1964). *The two cultures and a second look*. London: Cambridge University Press.