

Robert S. Frey & Nancy T. Frey
Baltimore

COUNTERBALANCE TO SCIENTIFIC-RATIONALITY IN EDUCATION

One of the essential dilemmas of contemporary life is: How are we to direct our intelligence in morally sound channels? We all agree that intelligence must be used to accomplish goals most efficiently. The choice of goals and the methods of fulfilment, however, lie in the realm of values. Keeping this primary question in mind, let us focus upon the scientific-rationalist trend which has dominated Western thought, response, and decision-making in the twentieth century. What this cultural pattern has done with stunning success is encapsulate and submerge competing traditions, thereby rendering them relatively meaningless compared to the prominence of scientific mentality. We submit that the merits of scientific-rationality are not sufficient to warrant this tradition being the foremost element in modern judgement and decision-making. Nor is the scientific trend adequate as the primary means of bringing up children in state-supported public schools.¹ Scientific methodology and thinking, be they in the form of physics, history, or psychology, have been established as the predominant, if not sole, traditions in education. No other tradition, no other theory of knowledge, has access to the power and funding vested in state-supported education as does scientific-rationality. It is not surprising, therefore, that our schools produce an élite group of technically competent professionals capable of morally reprehensible and calloused decision-making.

The pervasive opinion is that science and rationality are intellectual "demilitarized zones" wherein reality can be examined in a clear light, unencumbered by religion, emotion, or historical context. Finer grained examination should demonstrate that such is not the case. The scientific approach to understanding reality has appropriated intellect, reason, and rationality as its own. As such, the conceptual tools of scientific mentality include abstraction, emotionlessness, and "value-free" judgment. The entire thrust of scientific thinking is to excise any non-intellectual factors such as conscious and unconscious emotions from an analysis. When intelli-

1. Paul K. Feyerabend, *Against Method: Outline of an Anarchistic Theory of Knowledge* (London NLB, 1975), p. 217.

gence is measured psychologically, what is being evaluated is one's ability to manipulate non-concrete entities, in effect, abstractions. The same abstract capacity which enables one to mentally picture and manipulate electrons, and thereby understand chemical bonding, also permits one to perceive social problems in non-concrete, non-human forms. To exhibit reason is to act in a non-emotional, non-subjective, value-free manner. To be reasonable is to be objective and *de facto* in terms of judgement. The philosopher Max Horkheimer contends that ". . . reason has been so thoroughly purged of any specific trend or preference that it has finally renounced even the task of passing judgment on man's actions and way of life."² By not choosing goals and methods according to their qualitative differences, reasonable people allow society to proceed in a business-as-usual manner.³ The last element of the scientific approach which we noted was rationality. Rationality is a way of doing things, a means, whereby reality is understood and contemplated in terms of thought and reason, overagainst "emotion, intuition, or extrasensory modes of apprehension."⁴

Because the methodology and mentality of modern science is premised upon intellect, reason, and rationality, it therefore is morally directionless. Science *per se* has no intrinsic source of values; there are no built-in control mechanisms to direct the course of science away from morally reprehensible actions. Science can be applied as easily to the development of biological weaponry as to the synthesis of new food preservatives. Though science possesses no essential values, this is not to infer that it does not alter existing values, and create new ones of its own design. For instance, what do mother, father, child, or neighbour mean in the scheme of science wherein there is essentially "contemplation devoid of all interest"?⁵ The entire concept of values is based on the affirmation that there *are* qualitative differences in reality. It is precisely these qualitative distinctions which the scientific approach, with its emphasis upon the *quantitative*, specifically does not recognize. The only facets of reality which science will consider are those which can be empirically verified. Empirical analysis refers to learning derived from observation, experiment, experience, and sensory contact.

2. Max Horkheimer, *Eclipse of Reason* (New York : Seabury, 1974), p. 9.

3. *Ibid.*, p. 10.

4. David S. Landes, *The Unbound Prometheus : Technological Change and Industrial Development in Western Europe from 1750 to the Present* (Cambridge : Cambridge Univ. Press, 1969), p. 21.

5. Friedrich Nietzsche, *Beyond Good and Evil : Prelude to a Philosophy of the Future*, trans. Walter Kaufman (New York : Random, 1966), p. 45.

We must ask: In what way is life to derive value because of science? What *compelling* rationale does science offer for not killing people, or conversely, for caring about other human beings? Does scientific knowledge about human beings in particular — the specific gene sequence in human chromosomes, for example, which is the essence of genetic engineering — provide any reason to treat people humanely in the traditional religious sense of humaneness? We think not.

The scientific mode of inquiry has been expanded beyond the limits of being only an institution: it is now part of the basic fabric of society just as the Church was once part of that basic matrix.⁶ The French sociologist Michael Crozier's commentary on this state of affairs is noteworthy. "Beware of the temptation — difficult to resist — of the arrogance of rationality": it is, "a kind of folly to assume that 'a rational view of the world based on the inevitability of scientific progress can cope with a fragmented, culturally diverse society. . .'"⁷ Insofar as education is concerned scientific methodology is not just apparent in engineering and biology, but what were once termed humanities are now known as social science and political science. There are, to be sure, historical and sociological methodologies. However, most modern educational methods emulate the scientific pattern. The direction in the humanities and social-behavioral sciences is towards quantitative, rational analysis. At the college level, the standard of legitimacy for a given discipline is its recognition as a "hard science". Science has emerged in the twentieth century as *the tradition* to understand reality. Yet science's claim to the Truth is valid only at selected points where reality impinges upon our senses in quantitative terms.⁸ The absolutization of science is very destructive in terms of the ideas and concepts it nullifies. Traditions and perspectives which attempt to understand reality in non-empirical motif have little credibility today. The French scholar Jacques Monod asserts that science may be more detrimental in the ideas it neutralizes than in physical terms such as the atomic bomb which it helped to create.⁹

6. Paul K. Feyerabend, *Science in a Society* (London: NLB, 1975), p. 74.

7. Glen Seaborg, "Science, Technology, and the Citizen," in *The Place of Value a World of Facts*, eds. Arne Tiselius and Sam Nilsson (Stockholm: Almqvist & Wiksell, 1970), p. 212.

8. Aryeh Carmell and Cyril Domb, eds., *Challenge: Torah View on Science and Its Problems*, 2d rev. ed. (Jerusalem: Feldheim, 1978), p. 51.

9. Jacques Monod, "On Values in the Age of Science," in *The Place of Value in a World of Facts*, eds. Arne Tiselius and Sam Nilsson (Stockholm: Almqvist & Wiksell, 1970), p. 21.

In our schools, colleges, and seminaries, agreement with the scientific-rationalist perspective should be the "result of examination and choice"¹⁰ on the part of young people who are exposed to many alternative traditions in the course of their education. Theories of knowledge in addition to science need to be given access to the power of education. It is imperative that science should *not* be presented as capable of explaining everything about life. What is particularly dangerous about the present role of scientific methodology in education is that vast areas of human experience are considered relatively valueless because they cannot be subjected to quantitative or computer analysis. *Time* magazine "reports MIT Professor Joseph Weizenbaum worrying that 'the whole world is made to seem computable. This generates a kind of tunnel vision, where the only problems that seem legitimate are problems that can be put on a computer'."¹¹ Because science does not have the capacity to adequately consider the emotional, spiritual, or mythic dimensions of a human being, these dimensions are assigned an important value of nearly zero in scientific motif. The mythic dimension in man seeks to understand reality in an overarching sense. "What is man's purpose on the earth?" is explained mythically as opposed to mathematically or empirically. Given the contempt for human emotion evidenced by science, there should be little reason to wonder why individuals educated in the modern, rational spirit have little capacity for empathy. It is empathy, an emotional form of imagination, which permits one person to feel another person's psychological and physical pain.¹² Sensitive, moral response to human needs is unlikely to occur if emotion is *taught* and perceived to be a stigma rather than a complementary attribute.

In apparent attempt to provide value-free education for young people, we mistakenly believe that the scientific approach will fulfil this goal. Yet closer examination should reveal that far from being value-free, science is quite value-laden. Science may not comment directly on morality, for example, but by rendering religious perspectives unbelievable and by de-emphasizing human emotions, science *is* making value statements. Why is it that people cannot see that ostensibly non-committal, non-sectorial scientific posture about human beings *does* indeed *constitute* devaluation of life? The question becomes one of how to make science *one tradition among*

10. Feyerabend, *Against Method*, p. 217.

11. Bernard Fryshman, "Computer Teaching in the Yeshiva: Processing the Data, Programming the Risks," *Jewish Observer* 16 (1983); 15.

12. Richard L. Means, *The Ethical Imperative: The Crisis in American Values* (Garden City N.Y.: Anch. 1970), p. 145.

many in the educational forum; education must become an intellectual market-place of ideas. European philosopher Paul K. Feyerabend correctly maintains that education does not involve the mere presentation of physical (biological, astronomical, sociological) facts and principles. One does not learn: *some people* believe the earth moves around the sun; rather one is taught: the earth moves around the sun with the implication that any contradicting perspective is nonsense.¹³

A practical way to mitigate the power of scientific methodology and all its attendant problems would be to *divorce science from state sponsorship*.¹⁴ The power of religion was certainly lessened when it lost its secular arm, that is, the political state. Permit us to qualify what we mean by the separation of science and the state with respect to education. This suggestion is not to imply that scientific theories should not be presented in public schools. What is meant is that teachers need to present science *per se*; that is, physics, chemistry, etc., in a format such as: "Some people believe the theory of. . ." or "This theory explains *some* things about. . .". Moreover, the pervasiveness of scientific methodology in all subjects needs to be offset. Example: Even in English classes, one diagrams sentences to get to the basic elements and one dissects a novel to uncover symbolism, ironies, writing style, and literary devices such as alliteration. What is missing in both instances is an appreciation for the sentence or the novel as an entirety. The novel, for instance, remains fragmented as the result of analysis in the scientific spirit. The method espoused by modern education is *how to use something* rather than *to have an understanding* of that which one is using. Students learn how to use certain methods without comprehending what the specific methods are, who developed them, and how they were developed. Young people do not know, and are not encouraged to care to know, any more than how to insert numbers into formulae or specific events into historical models and come out with an answer. American education in the past emphasized memorizing specific, concrete things such as the spelling of words, mathematics problems, historical chronologies, and important people. Memory took precedence over interpretation. The modern scientific approach in which analysis is paramount blurs and plays down particularities in reality. Any notion of wholeness and completeness about reality is submerged. Let us consider how an English teacher might use a poem about a person to counterbalance scientific-rational thinking. The

13. Feyerabend, *Science*, p. 74.

14. Feyerabend, *Against Method*, p. 216.

teacher would need to emphasize that the students could learn about and *know* about people from that poem in ways no less valid than the results of psychological and biological measurement. Likewise, an essay about trees which speaks in terms of beauty, form, and contour helps us to know about trees in a manner which *complements* scientific knowledge. Why should, "a graceful, flowering dogwood tree", tell us *less* than "a *Cornus florida* specimen five meters high?" We assert that the scientific tradition does not totally subsume other traditions such as religious and philosophical, but merely overlaps with them at certain points. Additional scientific knowledge and new scientific theories, therefore, are not to be viewed as a linear progression towards overarching Truth. Rather, new knowledge simply presents us with more information for the development of our consciousness.¹⁵ Paul K. Feyerabend provides a specific example of science's claim to be the only legitimate means to acquire and express knowledge. Consider oracles and rain dances. These phenomena are interpreted by anthropologists as *expressions* of the needs of members of a society, as *functioning* as social glue, as *revealing* basic structures of thought. Anthropologists may even admit that oracles and rain dances lead to increased *awareness* of the relations between man and man, and man and nature. However, these phenomena are *not* interpreted as means of gaining *knowledge* or *knowing about* rain or spirit-related dimensions.¹⁶

Another example of the pervasiveness of scientific mentality throughout education comes from the discipline of psychology. This study of people, their minds, personalities, and behaviours, ignores the dimensions about a person which cannot be measured. Intelligence quotient (I.Q.) does not really tell us much more about the human mind than a particular person's ability to correctly respond to a group of problems which are limited in their scope of examination.

Being conducted in the rationalist *Zeitgeist*, modern education corrupts students' perceptions of reality by essentially disallowing thought and language not reflective of the results of sensory data. That which does not conform with what we sense directly by means of physical sense organs or with the aid of instruments is considered inaccurate, and thus unacceptable. An emphasis on the philosophic perspective within public schools and colleges would provide a countervailing force to the scientific viewpoint.

15. *Ibid.*, p. 160.

16. Feyerabend, *Science*, p. 77.

Philosophy does not stand in awe of sensory analysis, but rigorously questions the accuracy, legitimacy, and *reality* of the knowledge derived from the senses. Philosophy cultivates the art of *thinking* over and above *analysis*. Pure thought is a vital complement to quantitative consideration of reality. Another complementary perspective is the spiritual-transcendent tradition, which affirms a spiritual reality beyond human empirical verification. We recognize the repugnance this recommendation will cause in the American Jewish community and among the membership of the American Civil Liberties Union, for example. The separation of church and state relations is firmly entrenched in intellectual, liberal circles in America. We are aware that the public schools, simply by virtue of a time premium, cannot hope to present the many religious traditions in a vital, living context. Our point in raising this issue is not to advocate a neutered, non-sectarian civil religion¹⁷ being presented as transcendent perspective in our state-supported educational institutions. We do think that it is necessary for schools at the very least to make students aware that a religious interpretation of reality can help us *know* certain things about human beings and life in general. Of note on the topic of schools and religion is the Jerusalem Academy in Israel. Founded in 1970, it was the first Jewish school which specialized in educating students with limited Jewish background in Torah-learning—according to traditional Jewish religious values. Students are eventually enabled to relate the teachings contained in the Torah to modern-day problems. Relating religious sources to contemporary dilemmas is what is vital today. The scientific perspective does not help students deal with such questions as, Why do people exist? and What constitutes moral behaviour? The transcendent dimension in human experience *can* be given legitimacy if it is not totally discounted or ignored by the educational process. From the writer Edwin A. Abbott comes this interesting call to appreciate more than one interpretation of reality. "... It is as natural for us Flatlanders to lock up a Square for preaching the Third dimension, as it is for you Spacelanders to lock up a Cube for preaching the Fourth. Alas, how strong a family likeness runs through blind and persecuting humanity in all Dimensions!"¹⁸ Dr. Feyerabend admonishes that we must "demand that ideas and procedures that give substance to the lives of people be made full

17. Robert N. Bellah, "Civil Religion in America," *Daedalus* 96 (1967): 1-21. This is one of the definitive works on the phenomenon of civil religion.

18. Edwin A. Abbott, *Flatland: A Romance of Many Dimensions*, 6th ed., rev. (New York: Dover, 1952), preface.

members of a free society *no matter what other traditions think about them?*¹⁹ Without religious values, large-scale decisions can be and are made simply on the basis of least cost and cost-benefit analysis.²⁰ What concerns us now is the spectre of politically appointed bureaucrats in our Pentagon, educated in the scientific regimen, raised in the modern, rationalist spirit, who make judgements involving billions of dollars and millions of lives without a sense of the Transcendent. Values based upon transcendent respect for human beings remains exogenous to their decision-making.

What will cause man to want to, that is, *will* himself to be moral? We submit that consideration of a spiritual dimension in other people and the recognition of an over-arching spiritual dimension in the world will do so. "Seeing" the other person as being more than the synthesis of mind and body is a step in the right direction. If people were to act on more than one dimension and view others as being a myriad of dimensions, this may go far to deflect the tendency towards dehumanization which is present in our society. It should be apparent that students subject to a scientific-rationalist education will *not* realize the need for the behavioural restraints of the spiritual dimension. Such behavioural restraints deriving from a recognition of transcendent values will be what will help mankind become secure from annihilation. Education in America must come to recognize the value of a pluralism of ideas and methodologies. Having people raised with one ideology sets the stage for manipulation by governments and for prejudice against groups which do not conform to that ideology. Bertrand Russell's commentary that "we know too much and feel too little"²¹ would be an accurate assessment of the results of education conducted solely according to scientific rationality. Scientific knowledge alone will not serve to direct our intellectual capacity in humane channels. Glimpses of reality²² sponsored by non-scientific traditions need to be afforded the sanction, power, and funding of public education.

19. Feyerabend, *Science*, p. 79.

20. Richard L. Rubenstein, *The Age of Triage: Fear and Hope in an Overcrowded World* (Boston: Beacon Pr, 1983), p. 232.

21. Bertrand Russell, *Authority and the Individual* (Boston: Beacon Pr, 1960).

22. This figure of speech was borrowed from Huston Smith as cited by Ian G. Barbour, *Science and Secularity: The Ethics of Technology* (New York: Har-Row, 1970), p. 74.