

## IS ETHICS A SCIENCE? OUGHT IT TO BE?

by *Marcus G. Singer*

In pondering the question that has been put to us ("Is ethics a science?") I more than once found myself of two minds, or even more, with regard to it. I came to think that I could write a paper arguing that it is and that I also could write a paper arguing that it is not. And it further occurred to me that the really important question is not whether ethics as it is and has been is already at present a science but whether it can be and, even more important, whether it ought to be, whether it would be a good thing if it were. Clearly a distinction is called for among different senses of ethics, among different things and activities that go by or can go by that name. It turns out as well that a distinct, relevant, and usable sense must be attached to the term "science," which would be true to science as it is and can be and also capable of rewarding speculation, for it becomes apparent early on that here the appeal to ordinary use is of no use. It is another fact worth noting that our question is not just a philosophical question, as it is, but itself a question of ethics. It becomes clear enough then that ethics, at this level of abstraction, is not a science, for our question, though a question of ethics, is not a question of science.

My thesis is complex, but I think it can be stated briefly. It is that ethics stands for several distinct though related disciplines and activities and that in some or one of these senses ethics is not a science and cannot be while in others it either already is or else ought to be one. The particular branches of this thesis are these: (1) Ethics in the

Marcus G. Singer, professor of philosophy, University of Wisconsin, Madison, Wisconsin 53706, presented this paper at a symposium ("Is Ethics a Science?") during the annual meeting of the American Association for the Advancement of Science, San Francisco, California, January 3-8, 1980. He says: "I dedicate this paper to the memory of Richard Rudner, my good friend for over thirty years, who died, too young, July 27, 1979. For many years a member of the AAAS and for seventeen years editor-in-chief of *Philosophy of Science*, he was long concerned with this topic and made his own valuable contributions to it. Though I am sure he would not agree with all that I have to say, and though we now are deprived of the opportunity of finding out what his response would be, on this, one of his special topics, it is my hope that this paper will be not altogether unworthy of his memory."

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## ZYGON

sense of moral philosophy is not a science but a branch of philosophy. (2) However, ethics in the sense of casuistry, dealing with problems case by case, guided by accepted principles, settled precedents, and agreed-on ends, certainly can be a science, if it is not already, at least to the extent that jurisprudence is. (3) Further, ethics in the sense of the ethics of casuistry of science, operating from accepted principles and agreed-on ends, not only can be a science but ought to be, for there is need for such a discipline to deal with the ethical problems growing out of the practice of science itself. (4) In dealing with contemporary moral issues, which constitute social problems (hence moral problems for the society), moral philosophy (hence ethics) comes as close as can be to an empirical science, formulating hypotheses for resolving them and devising procedures for testing these hypotheses. This aspect of ethics, often overlooked, has various connections, though it is not identical, with the casuistry of science. (5) It may be of little moment, except for purposes of funding and prestige, whether ethics in the senses delineated be called a science. Yet the reasons for regarding it as a science are in the end pragmatic and moral and do not derive from the nature of things.

### PHILOSOPHY AND SCIENCE

We can determine nothing to the point from the meaning or the use of the term "science." It is used too variously, too loosely, and too unsystematically, and its various associations, resembling on occasion nothing more than an emotional afflatus, too often have made of it a treasure to be coveted. One can get any conclusion one wants by utilizing a suitable definition of science, and the word is elastic enough to accommodate this. Thus it does not at all jar with usage to speak of ethics as a science, or of "ethical science" (on the model, say, of "political science"), or of "the science of ethics" (on the model, say, of "the science of economics"—note the whimsical "the science of boxing"). But such expressions and usage constitute only a loose use, a mere way of speaking, in which the word "science" is used to mean no more than a special study or scholarly discipline or a special technique based on study and practice in which one can acquire expertise. And when the question whether ethics is a science is raised explicitly and specifically we cannot be content with a mere *façon de parler*. The matter must be considered on grounds more pertinent than this.

On the other hand we also must be on our guard against the sort of metaphysical imperialism that denominates the philosophy of some particular school as itself a science because based on science (Marxism is the only scientific philosophy," "Logical empiricism is the only

scientific philosophy”) and the ethical theory, whatever it is, of that particular ideology as the only scientific ethics because based on or derived from the axioms, the laws, or “the method” of science.

If we take our question literally as asking about ethics here and now and in the light of its traditions of over two thousand years, then it seems clear enough that ethics is not a science, since ethics is a branch of philosophy and philosophy is not a science. And I take it as manifest that philosophy is not a science, in any strict, definite, and distinguishable sense of the term.<sup>1</sup> If philosophy is a science, then what is not?

But this argument that ethics is not a science because it is a branch of philosophy would imply that logic is not a science and hence presents a dilemma. It seems equally manifest that logic is a science. If logic is not a science, then what is? This illustrates the difficulty of trying to decide such questions by philosophical arguments from essences and classifications and indicates that we must approach the matter more circumspectly.

A way out is suggested by the enormous developments in logic in the past fifty or one hundred years. It could be argued that logic in the sense in which it is a science is not (or is no longer) really a branch of philosophy, any more than mathematics is. From this point of view it is of no great import that logic continues to be taught and studied and developed in philosophy departments of universities. Academic classifications always lag behind actual developments, tend by a sort of intellectual osmosis to resemble one another, and often bear only a remote resemblance to the realities and affinities of research. After all, logic for some time now has been taught and studied and developed also in departments of mathematics; on this count it would follow equally that logic is a branch of mathematics, and there is no doubt that, as it is treated by some mathematical logicians, it is. It is also worth noting that the sense or kind of logic in which it is still properly a branch of philosophy and not an autonomous science now often goes under the name of philosophical logic or philosophy of logic, and before the relatively recent and revolutionary developments resulting in the development of logic as a science such a distinction was not even thought of. But logic itself—the logic that now has taken wing—is no more properly a branch of philosophy than, say, psychology is or mathematics itself.

There may be something in this. But taken at face value it is troublesome since it ignores the central role of logic in philosophy itself and also ignores the fact that, although logic from the very beginning has been regarded as a science, this has not by itself been regarded as a reason for not regarding it as a branch of philosophy.

## ZYGON

Clearly there is something wrong with the metaphor "a branch of." Why should a subject not itself a science not have a branch or a part that is? At the same time the argument that ethics is a branch of philosophy and hence not a science has at least some force, for ethics is a branch of philosophy in the sense that it is a philosophical discipline—moral philosophy. What we are running into here is the breaking down of departmental and disciplinary boundaries as subjects change and develop. Thus we have logic as both a branch of philosophy and a branch of mathematics, which shows that in logic philosophy and mathematics meet and there is no clear demarcation between them. (And if the logistic thesis is sound, mathematics would be a branch of logic.) The existence of interdisciplinary sciences, such as biophysics, physical chemistry, astrophysics, and ecology, shows the tenuous nature of rigid philosophical definitions of fields and distinctions among them. The sciences are living growing and developing and cannot be hemmed in by classificatory schemes, which at best can provide a rough guide to the terrain at a given period and which date very rapidly.

Consider the analogy with psychology. Psychology once was a branch of philosophy and developed into a science and was thence no longer a branch of philosophy. Instead we have as branches of philosophy philosophical psychology, philosophy of psychology, and philosophy of mind. This is but one instance of many (physics and linguistics are others). Philosophy through the ages has performed this mothering and nesting function. And for every science that has left the nest there is a philosophical counterpart (witness logic, psychology, astronomy, physics, linguistics, sociology). This indeed is just why there is an essential yet essentially vague distinction between philosophy and science and why philosophy or a philosophical subject is not itself a science. For a discipline, rational study, or mode of inquiry to be a science, it must have a background of accepted results, an accrual of funded knowledge. This is not to say that every science must be equally developed, or even that every science must be developed, but only that it must have achieved some success, in fact and not in metaphysical propaganda, so that practitioners can start from an already developed frontier. One who sets out to study a science sets out from where the science is at the particular time, not from the beginning.

In philosophy, on the other hand, not only can one always go back to the beginning, but there are always philosophers who are doing so and urging others to do so as well. This is why the history of philosophy plays such an important role in the development as well as

in the teaching of the subject. The history of science plays no similar role in science, though it does in the philosophy of science.

Now every (or nearly every) science has its philosophical part—its more theoretical, speculative, or methodological part—and the investigators in this theoretical part of the science often are engaged in activities and inquiries that are indistinguishable from those of a philosopher. At the same time we find that philosophy, or rather a particular branch of philosophy, such as logic, philosophy of science, or philosophy of language, can have its more settled, developed, and successful—its more scientific—part and that the practitioners there often are engaged in activities and inquiries indistinguishable from those of a scientist, even to the point of accruing a fund of demonstrated knowledge. Thus we also find that on occasion something like a revolution, a revolution of theory or interpretation, is effected in some science from the researches and speculations of some philosophical scientist or scientific philosopher. We also find on occasion that some branch of philosophy has become even unto a science, in character and form and activity and success if not in name and departmental autonomy. It becomes apparent then why the various attempts that have been made to draw a hard and fast line between philosophy and science have never succeeded. It is because there is none. It also becomes apparent why the various attempts that have been made to establish philosophy as a science have been unsuccessful, for there is an ineradicable distinction which such attempts ignore and distort. Philosophy and science are distinct but not wholly distinct. They overlap, and necessarily so. The boundary is necessarily and essentially vague. Since the same relationship holds for the various branches of philosophy and of science (within each there are areas of overlap where the distinction breaks down or disappears), there are branches of philosophy that also can be (or contain parts that are) branches or developing branches of science.

If the question then is whether there is anything essential to the nature of ethics that prevents it from developing into a science, the answer immediately presents itself: yes and no; it depends. Ethics, as the study of the principles, standards, and methods for distinguishing right from wrong and good from bad, though it is a branch of philosophy, and necessarily so, nonetheless can have branches capable of developing into a science. Philosophical questions about such principles or methods—what they are, their scope and limits, whether there are any, even whether there is any genuine distinction between right and wrong—always will arise, and there is no way of constructing a science for preventing this. No degree of success in the natural

sciences—our paradigm for success in science—has managed to dampen skeptical or philosophical questions about reality and appearance, truth and falsity, certainty and uncertainty, what can be genuinely known and what knowledge after all really is, and there is no reason to believe that ethical or normative science would be any more successful in this. But this suggests that, while ethics as a branch of philosophy (i.e., ethics = moral philosophy) is not a science, there is a sense or a branch of ethics in which it can be. There can be nothing essential to the nature of ethics that can prevent such a development from taking place. What we should expect is that the ethics that would be a science would have its philosophical part, in which philosophical questions are raised about the subject, and that moral philosophy (hence ethics) would have its empirical, scientific part, and this in fact we do find.

NORMATIVE SCIENCE

Consider the sense in which “ethics” is used to refer not to a branch of study but to a code of conduct. It is in this sense that we use the term when we speak of a given person’s ethics or the ethics of a profession or group. Note that there is a distinction, with which we are all familiar, between judging conduct immoral and judging it unethical. The judgment of conduct as ethical or unethical makes appeal to a code that is felt to depend somehow on the will and the agreement of human beings, whereas the judgment of conduct as moral or immoral does not appeal to a code or set of principles felt to be changeable in this way. This is shown by the fact that while it makes sense to say “That is not unethical, but it ought to be” it does not make sense to say “That is not immoral, but it ought to be.” In general, while it makes sense to say of something that it ought or ought not to be unethical, it makes no sense to say of something that it ought or ought not to be immoral. This point marks off an important distinction between, on the one hand, morality and the principles of morality (the subject of ethics = moral philosophy) and, on the other hand, ethics in the sense of a code of conduct and also in the sense of the theoretical discipline dealing with the formulation, application, and revision of the code of conduct. The principles of a code of ethics rests on agreement of some kind—sometimes explicit, sometimes implicit—and can be changed by agreement or negotiation. The principles of morality (the subject of ethics = moral philosophy) rest on no such agreement, and it is a presupposition of moral judgment in the context of moral judgment that these principles would be recognized as such by all reasonable persons with a sense of right and wrong. In other words, in the context of moral judgment these principles are conceived of as

having their status and character and content independently of what any group of persons agree on or fail to agree on.

Now the members of a certain group, a professional society, say, physicians or scientists, can agree on a set of principles and on the ends they are seeking to achieve by their characteristic activity (the practice of medicine or of scientific inquiry), and questions arising under this code can be decided by appeal to those principles and those ends. The backlog of decisions, so far as there is record or memory of them, will be settled precedents containing implicitly the principles on which they were decided. No doubt the principles themselves, perhaps even the agreed-on ends, will alter in the process. This process is one that resembles in the relevant respects that of deciding cases in the legal system. There will be and there characteristically are recognized and accepted procedures for revising the principles, as there are procedures for accepting them, and further experience in dealing with such problems will generate greater intelligence in the understanding and application of the code itself.

I can see no reason why this activity of applying the principles of a code to the decision of cases arising under them could not be a science. Philosophical considerations will play a role here analogous to the role they play in law and in the established sciences themselves. Furthermore, moral considerations, in the sense delineated before, will obtrude themselves occasionally (they may be taken to be always in the background), as they do in law and the established sciences, and the activity of considering the import of these will be extrascientific—philosophical in the larger sense but not itself a scientific activity. But this does not matter to the present point. Value considerations and matters of preference as distinct from opinion will enter to the same effect. Thus the principle occasionally put forward that “the scientist owes regard first, last, and all the time to the truth alone without regard for consequences” comes to appear doubtful even to its proponents as it becomes clear what the consequences of this credo are.<sup>2</sup> What becomes clear is that, if it is a hitherto accepted principle in the understood and implicit ethical outlook of scientists, it ought not to be. The exact working out of its limits and of the proper role of the attainment of truth and the growth of knowledge in science then becomes indeed an essential question for ethical-scientific inquiry to deal with. The tracing out of the consequences of such a credo for the course of scientific research itself and for the world at large is clearly itself a scientific task. The determination of what principles should govern scientific activity is then a task for the ethics of science, and it is not an activity or an inquiry that can be divorced

sensibly or morally from science itself. If it is not already a task for science it ought to be, and, since there is nothing in the nature of science or of ethics or of the world in which we live to prevent it, it can be. This discipline would be at once a branch of philosophy and a branch of science, and, insofar as it is or would be a branch of science, it is or would be a science.

The appropriate analogy here is with medical or clinical ethics. I am not referring here merely to the specific principles of medical ethics adopted, say, by the American Medical Association; nor am I referring specifically to the "Opinions and Reports of the Judicial Council," though such opinions provide an instance of the casuistry I have been speaking of, but rather to the discipline of clinical ethics which has developed and has had to develop as an adjunct to clinical practice. As I conceive it, medical or clinical ethics is a branch of medicine, dealing with the ethical-moral problems arising in and out of the practice of medicine as well as those arising about the practice or institution of medicine itself. It is not and it ought not to be considered to be solely or primarily a branch of ethics (= moral philosophy), for its aim is to deal with the problems that arise in the practice of medicine, not the problems that arise in the practice of philosophy, though there always will be much to philosophize about in contemplating and studying this activity. Similarly science ethics (= the ethics of science), parallel to medical ethics (though for idiosyncratic idiomatic reasons we cannot make use of the parallel expression, which would be "scientific ethics," since it has been preempted by those who have crusaded for ethics to "use the scientific method and become a science"), which already has begun to develop as an adjunct to science itself, ought to develop as a branch of science, for its aim is to deal with the ethical-moral problems arising in and out of the practice of science and about the practice and consequences of science itself. Freeman Dyson has put it very well: "The best way to approach the ethical problems associated with science is to study real dilemmas faced by real scientists."<sup>3</sup> The alternative is textbook ethics, in which students are put to studying often ingenious and intricate but still textbook dilemmas faced by textbook scientists, and these will be in every sense of the word unreal. But I do not mean to suggest, in speaking of the ethics of science as a branch of science, that its activities and inquiries are to be carried on solely by scientists and not by philosophers and others as well. I should think that almost by the nature of the case it would be interdisciplinary.

The claim that scientific inquiry is to be allowed to proceed to the solution of its own problems, no matter what the consequences, be-



cause knowledge is the sort of thing worth accumulating for its own sake, is a claim that cannot be supported by ethics or philosophy because the growth and maximization of knowledge by itself and without reference to any further or wider consequence are not a self-evident and self-certifying ideal. What I am saying is of course not new. It is that there are limits to scientific research, limits that have become apparent only in recent years—since Hiroshima. But I am saying also that the determination of these limits is a task for science itself, of that branch of science I am calling the ethics of science. Research on human subjects is the most prominent example of such research. Recombinant DNA research is the most dramatic and the most mysterious. But the most serious is so far the least heralded: nuclear reactions in laboratories for experimental purposes. Everyone has heard, especially since Three Mile Island, of the problems and risks connected with the use of nuclear energy for purposes of generating power. But few have thought of the similar problems and risks of generating excess radioactivity and disposing of radioactive wastes connected with nuclear fission, for example, in laboratories for scientific purposes. If scientific research itself is having an adverse effect on the atmosphere, the environment, and the lives of human beings, and if it consequently is having an impact on the survival of life on this planet and therefore of course on the continuation of science itself, then scientific research must be somehow restricted, and the extent and scope of this restriction ought to be determined by science itself rather than by legislation, court orders, or religious taboos.

It is clear then that the ethical science I am talking about would be and would have to be a normative science. It is not a matter of describing more exactly what is occurring or predicting more precisely what will occur, though such information may be vital to any such endeavor, but of laying down norms for determining what may be done and what ought not to be done and perhaps sometimes even what ought to be done. But there is no contradiction in the notion of a normative science, any more than there is in the notion of a normative judgment, and I know of no more pertinent ground for concluding that such a science would be impossible.

#### RESOLVING MORAL ISSUES

As I said earlier, in dealing with contemporary moral issues, moral philosophy (hence ethics) comes as close as can be to an empirical science. I have time to do no more than outline this. But first I must explain the distinction between moral problems and moral issues. A moral

problem at the simplest level is a problem about what ought to be done; it arises out of conflicting moral considerations; one feels the pull of the conflicting considerations and asks, "What should I do?" A somewhat different type of problem arises when different persons have made up their minds about what ought to be done and each tries to persuade the other to adopt his point of view. Where there exist strong differences of opinion on opposing sides of some moral question we have a moral issue, rather than a moral problem, for there is something at issue. The discussions that are resorted to as a means of settling them often turn into disputes, controversies, or conflicts, some of which, owing to the failure of other mutually agreed-on means of resolving them, may be resolved only by threats, intimidation, or warfare.<sup>4</sup> Some of the most difficult problems of our time, as of any time, involve moral issues that have gotten out of hand in this way. For every issue in which opinion is inflamed, in which the controversy gets worse and degenerates into conflict (and every strongly felt difference of opinion on a moral matter has this tendency), the society has a problem, the problem of how best to resolve the issue. Thus every serious, strongly felt, and long-standing moral issue in a society constitutes a social problem, which in turn is itself a moral problem—a second-order moral problem—of how best and most effectively to settle the issue. The still unresolved controversy about abortion is but one example among many. The controversy over preferential hiring/reverse discrimination—describe it as you will—is another. In antebellum America the great issue was over the moral acceptability of slavery. This was settled—people no longer argue about the moral acceptability of slavery—but only by a terrible war.

From the present point of view arguments for the proposition that, say, abortion, is or is not morally acceptable, are not to the point. They do nothing to help settle the issue. To deal with the issue one must consider not the first-order question whether abortion is morally acceptable but the second-order problem of how best to settle the controversy. The task of moral philosophy (hence ethics) with respect to such issues is to devise hypotheses for settling them and procedures for testing these hypotheses. The decision in *Roe v. Wade*, the landmark abortion case of 1973, looked for a time as though it might work in dampening controversy by effecting some sort of compromise among dangerously conflicting interests and philosophies.<sup>5</sup> It turns out that it has not, and the abortion issue is with us still, perhaps in worse state. So the job is still to be done. This aspect, this role, of ethics often is overlooked in the debates on fundamental philosophical matters and practical discussions of first-order moral problems themselves.

Now is this activity—would it be—a science? It is unquestionably the discipline of ethics, as it is moral philosophy taking seriously its role of helping solve the moral problems of society. But is it a science? Not if science is conceived of only as inquiry aimed at uncovering new facts about the world, though there is little reason to accept such a conception of science. Would the activity earlier called the ethics of science itself be a science? In the end of course it comes to little what we call it. If it is called a science, why then it may be in a more favorable position for federal funding, and it also may occupy a more regular place on American Association for the Advancement of Science programs. But it is much more important that there be an ethics of science than that there be a science of ethics, and the discipline is developing anyhow indifferent to what it is called. In the nature of the case the ethics of science, being a branch of science, would be a science, but one who does not want to call it that is free not to. Still there is good pragmatic reason (hence in this instance moral reason) for regarding this sort of activity as a science. And if it ought to be developed into a science, and there are no insuperable philosophical, ethical, or scientific obstacles in the way of this development, there is excellent reason for concluding that in this sense and in this role ethics both is and ought to be a science.<sup>6</sup>

#### NOTES

1. A brief discussion of the question whether philosophy is a science has been relegated to appendix 2 below. Some opinions on the matter of whether it would be a good thing if ethics were a science are considered in appendix 1.

2. I quote this as it was stated by R. B. Lindsay, who for other purposes formulated it without recommending it in "The Survival of Physical Science," *Scientific Monthly* 74 (March 1952): 140-41.

3. Freeman Dyson, "Disturbing the Universe," *New Yorker* (August 6, 1979), p. 38.

4. The wording of these last two or three sentences has been drawn almost verbatim from my *Morals and Values* (New York: Charles Scribner's Sons, 1977), pp. 5-6.

5. *Roe v. Wade*, 410 U.S. 113 (1973)

6. I am pleased to acknowledge the stimulation and help in formulating some of these ideas from conversations with A. Pablo Iannone and Margaret Carter. I want also to express my gratitude and appreciation to Carl Wellman for the yeoman and selfless service he has done in nurturing and organizing this symposium.

#### APPENDIX 1

On the matter of whether ethics is a science there has been, not surprisingly, no consensus among philosophers, though I think it fair to say that on this specific question there has been no overwhelming mass of discussion. A number of those who have said something about it have tended to regard it as an aspiration or ideal for ethics to become a science. Yet even here there has been, certainly, no unanimity. Perhaps the most vehement denunciation of such an ideal was voiced by Karl R. Popper, who castigated "scientific ethics"

for its “absolute barrenness” and claimed that “if it could be achieved it would destroy all responsibility and therefore all ethics” and hence be “not only irrelevant but . . . immoral” (*The Open Society and Its Enemies* [London: Routledge, 1945], 1: 207). This may sound extravagant, and it is certainly heated, but there is some point to what Popper said. He was thinking of the unique and transcendent moral value of autonomy, the moral requirement that the agent’s decision in dealing with a moral problem be the agent’s own and not something mathematically deducible from a code or already set down on an indexed list. But I think he overlooked the possibility that a person’s decision can be autonomous and still be wrong. The question always can be asked whether it is more important that an agent’s decision be his own or that it be the right decision, and this question is itself a question of ethics. It is by no means obvious, as these passages (though certainly not the fervently moral work to which they are no more than a footnote) seem to imply, that there is no right answer to a moral question and that all that is morally important is that each agent decide for himself. If everyone thought this, no one could decide. Answers to moral questions may not be simply deducible from “the index of the code,” and what is transcendentally important is the way they are arrived at, but it is also important what those answers are. It is neither self-evident nor certain that there is no way of constructing an ethics that would meet these moral requirements and also be scientific.

A somewhat more restrained and sensitive expression of a similarly negative view is contained in *A Theory of Value*, by John R. Reid (New York: Charles Scribner’s Sons, 1938). The following passages from this curiously overlooked work are worth quoting in extenso. After indicating “the dubiousness” with which he views any kind of “moral arithmetic,” Reid says:

. . . science, properly so called, deals with the abstract and metrical aspects of the experienced world, with those relational connections and uniformities that are the same, and determinately so, whenever and wherever certain events occur. Its ideal is to achieve systematic schemata, laws of constant relationships, that can be depended upon, that afford a reliable basis for prediction and control. . . . To this end, it selects, out of the total qualitative context of raw experience, only those traits which are amenable to scientific treatment. . . . It is not interested in the special flavor, the local color, the provincial idiom of experience, but rather in those generic characters, those symbolic and syntactical structures factually involved in all experience. Thus science is, so to speak, the Esperanto of the intellect.

If this is what science is, esthetic or moral criticism, as we know it, is obviously not science, nor is it easy to see how it could possibly become science. The abstract constancy of science, the maximum convertibility of its terms, the smooth standardization of its experimental processes, these useful ideals of the physical sciences, when set up and worshipped by the rationalist critic, surely are transformed into false gods. [Pp. 268-69]

This strikes me as marvelously well expressed, and it seems a pity that this sensible book of little over forty years ago should have been so lost from sight. Yet it is obvious that Reid was thinking of science on the model of “the physical sciences”—physics and chemistry. It is true and unfortunately so that the physical sciences have served so many for so long as the model of what anything scientific must be. Yet it is time that this model of what a science must be were given up, for there is no “must” about it. If to be scientific ethics would have to be like physics in the specified respect, then it is immediately evident that ethics could not be a science. But why should it have to be like this—why “scientific” on *this* pattern?

APPENDIX 2

I have said that to me it is manifest that philosophy is not a science, and I do not regard this as any deficiency or falling short on the part of philosophy, as though in order to become better and more worthwhile it should become something else. But there of course have been any number of philosophers who have argued that philosophy is a science, or rather that it should strive to become one, so that at present it is a somewhat less than perfect science, aiming like science to attain knowledge by "the method of science" but not quite getting there. It is no service to science to treat it as though it were some form of magic; nor would it be any service to science to make over philosophy in its image.

One philosopher who insisted about as much as anyone on the scientific character of philosophy was C. J. Ducasse. Ducasse's main work on the subject bears the title "Philosophy as a Science," not "Philosophy *Is* a Science," and it is clear enough that under certain aspects and from certain points of view—from which the resemblances are emphasized and the differences ignored—philosophy can appear as a science. What Ducasse contended is that "philosophy . . . attempts to be genuinely a science" (*Philosophy as a Science: Its Matter and Its Method* [New York: Oskar Piest, 1941], p. viii; italics added), that "philosophy is, by intent even if not as yet fully in fact, a science" (*Nature, Mind, and Death* [La Salle, Ill.: Open Court Publishing Co., 1951], p. 7; italics added), from which it follows fully in fact and not merely by intent that philosophy literally as it is in fact and intent to one side is not a science. Physics does not attempt to be genuinely a science; it already is. And so with geology and linguistics and physiology and biochemistry. I take it to be literally false that philosophy is a science and I think I have explained amply in the text what I take the relations between philosophy and science to be—multiple, overlapping, and in flux. But such works as Ducasse's perform a service in helping us get clearer on the matter—the service, that is, of a useful false hypothesis.

Ducasse's view is actually more subtle and precise than I have made it out to be, and it is only fair to quote the following passage from his *Philosophy as a Science*: "What is implied by calling ethics, epistemology, aesthetics, etc., sciences is not that they have already won knowledge in amounts comparable with, say, chemistry, or already have to a comparable extent acquired mastery of their appropriate methods, but only that, unlike phrenology, they are capable of becoming genuine sciences. This only means that (a) what they seek is knowledge, properly so called (b) concerning a subject matter that really exists and is distinctive of them, and (c) that there is a method, as yet not adequately mastered by them, which if it were employed would yield genuine knowledge concerning their subject matter" (pp. 115-16). I cannot resist noting that on this account of what a science is John Somerville's marvelous invention, umbrellaology, would be a science (as would soapology, shoeology, pipeology, couchology, and so on).

Ducasse's workmanlike account differs greatly in character from Hans Reichenbach's *The Rise of Scientific Philosophy* (Berkeley: University of California Press, 1953), which is intended to establish the thesis that philosophy is a science, that "there is, and always has been, a scientific approach to philosophy. . . . from this ground has sprung a scientific philosophy which, in the science of our time, has found the tools to solve those problems that in

earlier times have been the subject of guesswork only. . . . philosophy has proceeded from speculation to science." Those who have not "abandoned hope that some day philosophy will become as cogent and as powerful as science" here have their expectations rewarded, for "such a scientific philosophy is already in existence . . ." (pp. vii-ix). Where? Why, within the covers of *The Rise of Scientific Philosophy*, and its name is of course logical empiricism.

Consider as a final variant on this theme Bertrand Russell's *Our Knowledge of the External World, as a Field for Scientific Method in Philosophy* (London: Allen & Unwin, 1926), in which "logical atomism," Russell's philosophy at that time, is advanced as "the scientific philosophy," and it is made manifestly clear that for Russell the aim is for "philosophy . . . to become a science" (pp. 14, 7).

I have included this material here only to provide some background for the discussion in the text of the relations between philosophy and science, and my arguments on the matter are contained there. But a further word of explanation may be in order. I do not mean to suggest, by what may seem a somewhat arch portrayal of the views I have just paraded, that I regard the aim of transforming some special study into a science as necessarily misguided. It sometimes has been. But also it sometimes has worked with great success. Nonetheless the advocates of philosophy into science have failed somehow to notice that a branch of philosophy that has been transformed into a science still remains, in somewhat different form, to be sure, a branch of philosophy, and that philosophy has not diminished in size or complexity as the number of the sciences has increased. The attempt to transform philosophy into science is but another idol of the marketplace and resembles the aim of the alchemists to transform base metals into gold. The gold of course is science, and there can be no doubt what the base metal is supposed to be.

### APPENDIX 3

Though I shall not list all the works consulted in the course of preparing this paper that are worthy of mention, I must mention the following by Richard Rudner: (1) "The Scientist *qua* Scientist Makes Value Judgments," *Philosophy of Science* 20 (January 1953): 1-6; (2) "Remarks on Value Judgments in Scientific Validation," *Scientific Monthly* 79 (September 1954): 151-53 (reprinted with revisions under the title "Value Judgments in Science" in *Morals and Values* [n. 4 above], pp. 256-59); (3) "Science and Ethical Bases," *Humanist* (September-October 1958).