



SCIENCE AND PHILOSOPHY

Mortimer J. Adler

[Part 2 of 2]

The latter—the special knowledge that is operative when knowledge is put to use—the Greeks called *technē*. The English equivalent of that word is, of course, “technique,” but I prefer the more colloquial “know-how.”

Distinguishing between the spheres of application or use, we can speak of productive and practical know-how—that is, the know-how that is involved in the business of making things or achieving desired effects and results and the know-how that is involved in applying knowledge to the affairs of action, the problems of individual conduct and the conduct of society.

Practical know-how, particularly that form of it which is involved in applying scientific knowledge, concerns the means for achieving whatever ends of individual or social action we set up for ourselves. It does not, and cannot, tell us what ends we ought to pursue, but it may tell us what ends are, or are not, practicable to pursue because adequate means are, or are not, available; it often gives us knowledge of the diverse means that are available for achieving a particular goal; and, with respect to alternative means, it often enables us to make a judgment about their relative efficiency or effectiveness.

Productive know-how, again especially that form of it which is involved in applying scientific knowledge, concerns the steps to be taken in making useful tools and machines, improving their efficiency, and shaping or controlling nature to serve our purposes. It does not, and cannot, tell us what our purposes ought to be; it merely helps us to realize whatever purposes we may have, so far as their realization depends upon instrumentalities that we can devise or controls that we can exercise over natural processes. Currently, such productive know-how, based on science, is called technology. [4]

4

It would be reasonable to expect each different branch of knowledge to have a kind of usefulness or application distinctively and characteristically its own. What is the usefulness of philosophical knowledge? With regard to productive know-how it is generally recognized that philosophy is totally useless; it has no technological applications whatsoever. As William James said, it “bakes no bread”; it builds no bridges, makes no bombs, invents no instruments, concocts no poisons, harnesses no power, and so forth. Francis Bacon's famous remark that knowledge is power (that is, that knowledge gives us mastery over nature and an ability to produce or control effects according to our wishes) is as false in the case of philosophical knowledge as it is true in the case of scientific knowledge.

With regard to practical know-how, philosophy is just as deficient, though this is not as generally recognized as its deficiency with regard to productive know-how. Philosophical knowledge does not instruct us concerning the means available for achieving whatever results we desire, or whatever goals or objectives we may set ourselves. By itself (without the addition of scientific knowledge), it does not tell us whether our practical purposes are or are not practicable, because there are or are not adequate means for achieving

them. Nor does it enable us to judge the relative efficiency or effectiveness of competing means for achieving the same ends.

Is philosophy, then, totally useless? The answer must be in the affirmative if the usefulness of knowledge is exhaustively represented by the kinds of productive and practical know-how that have their basis in scientific knowledge. But that is not the whole story.

As I pointed out earlier, science does not and cannot tell us what ends we *ought* to pursue; it does not and cannot tell us what our purposes *ought* to be. However useful it is productively, it does not tell us whether we *ought* or *ought not* to produce certain things (such as thermonuclear bombs or supersonic transport planes); it does not tell us whether we *ought* or *ought not* to exercise certain controls over natural processes (such as human procreation or changes in weather). However useful it is practically, it does not tell us whether we *ought* or *ought not* to employ certain means to achieve our ends, on any basis other than their relative efficiency; it does not tell us whether one goal *ought* or *ought not* to be preferred to another. It does not tell us, in short, what we *ought* or *ought not* to do and what we *ought* or *ought not* to seek.

In Chapter 5, where I dealt with the tests of truth in philosophy, I pointed out that there were two distinct modes of truth, not one. The first is the correspondence theory of truth, according to which our thinking about reality is true if it agrees with the way things really are or are not. We called this mode of truth descriptive. It is expressed in statements that contain “is” and “is not.” The other mode of truth is prescriptive, and is expressed in statements that contain the words “ought” or “ought not.”

Philosophical knowledge of the first order is the dimension of philosophy in which we find descriptive truth. It is in the second dimension of philosophy that we find the prescriptive truths of ethical and political philosophy.

These truths state the categorical moral obligations that govern the conduct of our lives and the institutions of our societies. In this second dimension, we find the use that philosophy uniquely confers on us.

The difference in the usefulness of science and philosophy corresponds to the difference in their methods as modes of inquiry. No question properly belongs to science which cannot be answered or elucidated by investigation. That is precisely why no *ought* ques-

tion is scientific and why, therefore, science includes no prescriptive or normative branch, no *ought* knowledge.

Beginning in the seventeenth century, the natural sciences gradually separated themselves from speculative philosophy. More recently, the social sciences have declared their independence of philosophy in its prescriptive or normative dimensions. In order to establish themselves as subdivisions of science, such disciplines as economics, politics, and sociology had to eschew all normative considerations (that is, all *ought* questions or, as they are sometimes called, questions of value). They had to become purely descriptive, in this respect exactly like the natural sciences. They had to restrict themselves to questions of how men do, in fact, behave, individually and socially, and forego all attempts to say how they ought in principle to behave.

Science and philosophy as public enterprises: There is no question that it is advantageous for each to be conducted as a public rather than a private enterprise. But the differences in their modes of inquiry and their methods make it impossible for them to be public enterprises in the same way, and also make it more difficult for philosophy than for science to be thus conducted.

If philosophy and science were as much alike as two subdivisions of science (for example, physics and chemistry or zoology and botany), the expectation of similar performance would be justified. That, however, is not the case. All the subdivisions of science involve essentially the same type of method: they are all investigative as well as empirical disciplines. Philosophy is noninvestigative. Hence, the comparability of science and philosophy as modes of inquiry that seek knowledge in the form of *doxa* must be qualified by the essential difference between an investigative and noninvestigative procedure in acquiring knowledge and testing theories or conclusions.

Three consequences follow from this essential difference. I call attention to them, not only because they help understanding the divergent characteristics of science and philosophy as comparable disciplines, but also because they enable us to modify the prevailing judgments about philosophy's inferiority to science with respect to agreement and progress. The comparison—and evaluation—of science and philosophy in these respects must be made with an eye on the difference between them and with due account taken of the implications of that difference.

Because science is investigative and philosophy is not, specialization and division of labor are possible in science as they are not in philosophy—at least not to the same extent.

The multiplicity of the major subdivisions of science, and the further subsectioning of the major subdivisions, is closely related to the multiplicity of specific techniques for carrying on the investigation of nature or society, each a technique for exploring a special field of phenomena. Men become specialists in science through mastering one or more of these techniques. No one can master all of them. The ideal of the generalist in science may, in the remote past, have had the appearance of attainability, but it does so no longer. To be a scientist now is to be a specialist in science. The total work of science is thus accomplished by the specialization of its workers and by an intensive division of labor, not only on the side of investigation, but also on the side of theoretical developments or constructions relevant to the data of investigation in a particular field.

Turning to philosophy, we find an opposite state of affairs. The core of common experience to which the empirical philosopher appeals is the same for all; and common or ordinary experience involves no specialized techniques. Hence, there is and can be no basis for specialization or for division of labor in philosophy on the empirical side. These things naturally pertain to the work of men when they investigate, just as naturally they play no part in the work of men when they do not.

On the theoretical side, there is some possibility of a division of labor in philosophy—as between logic and metaphysics, or between metaphysics and ethics. In fact, specialization has occurred both in the university teaching of philosophy and in the concentration of this or that professor of philosophy upon this or that sector of philosophical inquiry. Nevertheless, it remains *possible* for one man to make contributions in all the major sectors of philosophical thought. [5] The great philosophers of the past have certainly been generalists in philosophy; and in our own century the writings of Dewey, Russell, Whitehead, Bergson, Santayana, and Maritain touch on all the major questions of philosophy. This sufficiently makes the point of contrast between science and philosophy, for, though in antiquity, before specialization took place, Aristotle could make contributions to the major fields of science, that is no longer possible. In fact, specialization and division of labor have now reached the point at which it is almost impossible for one man to do outstanding theoretical work in more than a single field of scientific research.

Because there is so much specialization and division of labor in science, and so little in philosophy, as a consequence of the fact that one is and the other is not investigative, it follows as a further consequence that the authority of experts must be relied on in science and cannot be relied on in philosophy.

The individual scientist accepts the findings of other scientists—both in his own and other fields—without redoing the investigations on which those findings are based. He may, in rare instances, check the data by repeating the experiment, but for the most part, especially with regard to matters not immediately within his own special field of research, he proceeds by accepting the findings of reputable experts. He cannot do otherwise and get his own work done.

In many cases, though not in all, the individual scientist also accepts the theoretical conclusions reached by other scientists, if these have the authority of recognized experts, without checking all the steps by which those conclusions were originally reached or tested. In other words, a highly specialized scientist, working in some narrow corner of the whole scientific enterprise, accepts a large body of scientific opinions on the authority of other scientists. It would be impossible for him or her to do otherwise.

Since philosophers proceed entirely in terms of common experience to which all have equal access, and since it is by reference to common experience that philosophical theories or conclusions must be tested, philosophers need never accept a single philosophical opinion on the authority of other philosophers. On the contrary, whatever theories a philosopher holds and whatever conclusions he reaches he can and should arrive at them by judgments he himself makes in light of the very same evidence that is available to all others, including all other philosophers. Where, in the case of scientific work, the individual cannot dispense with the authority of his fellow workers, he cannot, in the case of philosophical work, rely on it. One might go further and say that the person who accepts any philosophical opinions whatsoever simply on the authority of their spokesmen, no matter how eminent, is no philosopher.

Because science depends on special experience acquired by investigation, whereas philosophy relies on and appeals only to the common experience of mankind which, at its core, is the same for all individuals at all times and places, philosophers have a contemporaneity that scientists cannot have.

Philosophical questions that arise from and relate to common experience can make contemporaries of philosophers as far apart in

time and place as Plato and Bradley, Aristotle and Dewey, Augustine and William James. Another way of saying this is that there is no purely philosophical question that concerns us today to which it would be impossible to find an answer given by a philosopher who lived at some prior time. Earlier philosophers may not have actually considered all the questions with which we are concerned, but in many cases they did, and in all cases they could have. Hence, in dealing with controversies about philosophical matters, the disputants may be drawn from centuries far apart.

Not all philosophical questions have the timelessness just indicated. This characteristic pertains only to those purely philosophical problems that depend exclusively on common experience for their solution and involve no admixture of scientific knowledge. What I have called mixed questions in philosophy—especially those that depend, both for their formulation and solution, on the state of scientific knowledge—vary from time to time. Those that confront philosophers today are certainly not the same as those faced by Aristotle or Descartes. The same holds true of those mixed questions in philosophy which depend on special historical knowledge, and of those which lie athwart the border that separates philosophy from revealed religion.

With these exceptions noted, let me repeat the point: purely philosophical problems are of such a nature that the philosophers who tackle them *can have the character of contemporaries* despite their wide separation in time and place. The accidents of their immersion in different cultural milieus may affect their vocabularies and their notional idioms, but this does not prevent them from being construed as addressing themselves to the *same* problems and as engaging in debate concerning the merits of competing solutions.

The very opposite is the case in science. A scientific dispute usually, if not always, involves individuals living at the same time. At any time, the current scientific problems to be solved are conditioned by the state of the data currently in hand or the state of the research currently being carried forward. Competing theories are sponsored by individuals who take account of the latest findings of research and of the directions taken by investigations going on. Archimedes, Galileo, Newton, and Einstein cannot function as contemporaries in the way in which Aristotle, Aquinas, Locke, and William James can.

Let me state this point in still another way: the whole record of past philosophical thought can have critical relevance to current philosophical problems, whereas the whole record of past scientific work is not as relevant to current research and theorizing. A much

larger portion of the scientific past has only antiquarian interest for scientists today. If there are philosophers today who would say that an equally large portion of the philosophical past can be similarly regarded, their view of this matter, I submit, stems from their relegation of philosophy to the plane of second-order questions, or to their not recognizing the role of common experience in the formulation and solution of first-order questions that are purely philosophical.

5

In light of all the foregoing considerations, the final question to be faced is one of evaluation. What value should we place on philosophy vis-à-vis science—in our culture, in our educational institutions, and in our lives, personally and socially?

To persuade readers that my answer to this question is correct, let me ask them to remember the four dimensions of philosophy as they are distinguished in this book. To help them do this, I am going to set forth below elaborated renditions of Parts Two and Three in the Contents.

PART TWO: The First Two Dimensions—Philosophy as an Autonomous Branch of First-Order Knowledge

CH. 9: Descriptive Knowledge: the philosophy of nature, philosophical psychology, metaphysics, and philosophical theology

CH. 10: Prescriptive Knowledge: knowledge of good and evil, right and wrong, and of our moral obligations with respect to leading a good human life and helping to establish and conduct a good society

PART THREE: The Third and Fourth Dimensions: Second-Order Analytical Thought

CH. 12: About basic ideas for the understanding they give us about reality

CH. 13: About the diverse kinds of knowledge and intellectual work

With that general scheme before us of philosophy's four-dimensional domain, does it not follow that a culture, an education, and a

life bereft of philosophy is a poor one, indeed, poorer by far than a culture, education, and life that is enriched by philosophy?


Does it not also follow that, of the four dimensions, only one of them is, like science and history, first-order *descriptive* knowledge of reality? If so, is not the first-order *prescriptive* knowledge to be found in ethical and political philosophy a highly desirable addition to all that we can ever learn from science and history?

That is not the only desirable addition to the knowledge we can derive from science and history, for they are limited to first-order knowledge by their investigative mode of inquiry. They are incapable of enlarging our understanding by the second-order work, or philosophical analysis, with respect to ideas and all branches of knowledge. Without the contributions made by philosophy, to be discussed in Chapters 9, 10, and 11, we would be left with voids that science and history cannot fill.

Even in the one sphere in which the contributions of science and philosophy are comparable—our knowledge of reality—philosophy, because it is noninvestigative, can answer questions that are beyond the reach of investigative science—questions that are more profound and penetrating than any questions answerable by science. By virtue of its being investigative, science is limited to the experienceable world of physical nature. Philosophical thought can extend its inquiries into transempirical reality. It is philosophy, not science, that takes the overall view.

Furthermore, when there is an apparent conflict between science and philosophy, it is to philosophy that we must turn for the resolution. Science cannot provide it. When scientists such as Einstein, Bohr, and Heisenberg become involved with mixed questions, they must philosophize. They cannot discuss these questions merely as scientists; the principles for the statement and solution of such problems come from philosophy, not from science.

For all these reasons, I think we are compelled to regard the contributions of philosophy as having greater value for us than the contributions of science. I say this even though we must all gratefully acknowledge the benefits that science and its technological applications confer upon us. The power that science gives us over our environment, health, and lives can, as we all know, be either misused and misdirected, or used with good purpose and results. Without the prescriptive knowledge given us by ethical and political philosophy, we have no guidance in the use of that power, directing it to the ends of a good life and a good society. The more power science and technology confer upon us, the more danger-

ous and malevolent that power may become unless its use is checked and guided by moral obligations stemming from our philosophical knowledge of how we ought to conduct our lives and our society. 

NOTES

4 The word “technology,” which, according to its Greek roots, should mean “know-that about know-how,” is thus currently used as if it had the same meaning as “technique” (i.e., skill or know-how).

5 It may be that under the prevailing conditions of academic life, professors of philosophy have to become specialists in one philosophical area or another. But, ideally, philosophers should not be specialists as scientists and mathematicians are, but generalists, working in all of philosophy's four dimensions.

Chapter 7 from his book *The Four Dimensions of Philosophy*.

WELCOME NEW MEMBER

David Smollen

We welcome your comments, questions or suggestions.

THE GREAT IDEAS ONLINE

is published weekly for its members by the

CENTER FOR THE STUDY OF THE GREAT IDEAS

Founded in 1990 by Mortimer J. Adler & Max Weismann

Max Weismann, Publisher and Editor

Marie E. Cotter, Editorial Assistant

A not-for-profit (501)(c)(3) educational organization.

Donations are tax deductible as the law allows.