REASON IN SCIENCE AND PHILOSOPHY

BY VICTOR S. YARROS

RECONSTRUCTION is taking place in philosophy. The need of the critical as well as the positive work now being done in that high realm is admitted by everybody entitled to an opinion on the subject. Unfortunately, not all the workers are proceeding under a plan, and, as we know, the world just now is profoundly interested in planning—economic, political, social and scientific. Reconstruction is a term which implies a plan and definite responsibility in some quarter for that plan.

Perhaps the truth is that what is taking place in philosophy is not really actual reconstruction, but something more modest, something preliminary and preparatory, something confused yet necessary and valuable.

There is much activity and much discussion of raw materials, methods, principles, old and new concepts. Almost everything is in the melting pot. Once familiar tags and formulæ have lost their meaning. There is more disagreement than agreement.

This is not surprising, but it is regrettable that the workers do not use the same language. That is to say, they do not take care to create a basis for understanding. Certain essential terms in the most fundamental propositions are used in different senses; definitions vary, and a good deal of philosophical controversy is carried on without the slightest regard for the meaning of the words and phrases employed. Little effort is made to separate major from minor premises, premises from conclusions, assumptions from verified and accepted findings.

Bertrand Russell once said that no philosopher has ever understood any other philosopher. That seemed a willful paradox, a facetious exaggeration. But whether philosophy was or was not a Babel of tongues in the past, it certainly is that today. It is not advancing or getting anywhere.

It is a fact, for example, that Pragmatism as a philosophy has already demonstrated its sterility and impotence. It brought forth a few arresting and significant ideas, but these did not constitute a philosophy. There has been no growth since, and now even the

few original contributions credited to Pragmatism are being vigorously challenged.

The foregoing remarks may seem unduly pessimistic or extravagant, but they are suggested by a concrete example, the appearance of, and reaction to, a new volume on philosophy from the pen of Prof. Morris R. Cohen of New York, a thinker of exceptional intellectual powers and extraordinary erudition who has many admirers and followers. The work is entitled *Reason and Nature. An Essay on the Meaning of Scientific Method.* The author is not a builder of synthetic philosophic systems, but he is a keen critic of existing philosophies as well as of modern science. He is anxious to establish a point of departure, a proper conception of method. Many of the current errors and fallacies in science, including sociology and psychology, and in philosophical speculation, Prof. Cohen attributes to crude and faulty methods, or wrong postulates, or both. Anticipating certain objections from those who are more interested in final judgments than in the process of arriving at such judgments, Prof. Cohen thus tries to disarm opponents:

> To those [he writes] who labor under the necessity of passing judgment on this book in terms of current values, I suggest the following:
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> The author seems out of touch with everything modern and useful, and yet makes no whole-hearted plea for the old. He believes in chance and spontaneity in physics, and law and mechanism in life. He has no respect for experience, induction, the dynamic, evolution, progress, behaviorism, and psycho-analysis, and does not line up with either the orthodox or the revolutionary party in politics, or religion, though he writes on these themes.

Prof. Cohen assures his readers that he has profound faith in philosophy itself, whatever follies are committed in its name. Pending the emergence of a satisfactory philosophy that will furnish answers to fundamental issues, what we need, according to him, is cultivated and disciplined reason. It is reason that preserves what is best in civilization, and it is reason disciplined that prevents us from worshipping false gods, trying worthless or noxious nostrums, or espousing wild and mischievous ideas.

To cultivate and discipline reason, however, science is not enough, and neither is philosophy. We have need of all our intel-

lectual assets and weapons—science, logic, common sense, and philosophy.

Prof. Cohen is impatient with and contemptuous of Bergson's intuitionism, *elan vital*, etc., as well as with William James' piecemeal supernaturalism, irrationalism, and will to believe. History, he contends, teaches us the great lesson that, in the long run, reason alone counts. To those who claim inner illuminations, the voice of faith or of the heart, he says: "You cannot both distrust logic and claim logical cogency for your own (fallacious) arguments."

But when do we know that our reason is disciplined and cultivated, or that we have adopted the right and true position upon a question that is still open and unsettled? Does any school or thinker ever admit that his reasoning is illogical and lame? Prof. Cohen offers a test of right reason, finding it in what he calls the principle of polarity, which is the principle of balance and synthetic unity. The orthodox dogmatist is wrong, as is the revolutionary, because neither sees the other side of the question he professes to have solved. Superficial thinking generally is attributable to violation of the principle of balance and unity.

There is no wide difference between this view and the famous Hegelian formula—thesis, antithesis and synthesis. The difficulty is in determining the correct application of the test—of any test. No school, however extreme it seems to us, admits that it has sinned against the principle of polarity or has not endeavored to work out a synthetic solution. The communist, the fascist, the liberal, the conservative, the evolutionary radical, severally claim to have weighed all sides and to have arrived at a reasonable synthesis. There is no way of settling intellectual controversies except by leaving the final judgment to time. That, however, is hindsight, not foresight, and certainly one of the functions of philosophy, as of science, is to foresee, direct, and guide.

Whether or not one accepts all the ideas and views set forth in the comprehensive work, it is safe to say that no really scientific and philosophical thinker will challenge the author's leading or important propositions. But the work, curiously enough, makes not for agreement, but for polemics and contention. Prof. Cohen seems to take special pleasure in puncturing fallacies, revealing contradictions, and directing attention to misty and nebulous statements. He has irritated some of the philosophers he particularly

admires, quarreling with them about terms and definitions, parenthetical remarks, and nonessential points generally.

Particularly provocative is his Epilogue, a wholly superfluous essay in "dispraise of life, experience and reality." In this chapter Prof. Cohen is joy-riding, poking fun at other thinkers and making hash of their formulas and concepts. Of course, no one can seriously inveigh against life, experience, or reality. But Prof. Cohen selects phrases he deems vague or paradoxical, and gleefully pounces upon them.

If philosophers would but take the trouble to start with careful definitions, how much confusion and waste they would avoid!

Take the word "life." Prof. Cohen does not like that term, and criticises William James's remark—wholly innocent—that a certain philosopher pleased him because his books had "the tang of life." Life! scornfully exclaims Cohen; why, there is bad life, empty life and sordid, worthless life. He thought, he adds, that philosophers were concerned to teach and inculcate *the good life*. It was rank heresy, then, to praise any work for its alleged savor and flavor of life.

Now this, as Prof. Dewey has said, is mere and sheer quibbling. James had no intention of disparaging goodness in his commendation of a book he had found vital and stimulating. He was weary of dull, tiresome, lifeless books on philosophy, and glad to welcome a work that, at least, had the merit of possessing readableness, power, the tang of life. He, a humanist and militant progressive, would have been the first to condemn a book that glorified or rendered attractive the bad, vicious or selfish life. To preach the good life to James is to cap the climax of supererogation!

Then there is the term experience. Prof. Cohen rails at those philosophers who overrate the value of personal, immediate, direct, sensuous experience, and leave but little room for rigorous logical thinking and the use of reason. He dislikes the word because to him it denotes what he calls "events in personal biographies." Perhaps the average man does use experience in that restricted sense, but the scientific thinker knows that human experience includes much more than immediate and vivid sensations. Instead of railing at experience, why not attempt agreement at the outset upon a proper definition of the term?

Reason, or the process of reasoning, is itself an experience, says

Prof. Cohen. And to reason, he contends rightly, is to assume laws or invariant relations in nature. If no such relations, or uniformities, existed, no finite number of physical sensations or personal experiences could prove the existence of any universal principle of law. All this is true, but only the decaying school of sensationalistic particularism needs such reminders. With the other schools it is almost a maxim that reason is the interpreter of sensations and personal experiences, and that the process of reasoning considers the larger experiences of whole societies, races and civilizations in the light of the theory of natural laws and causal relations.

Prof. Cohen is a rationalist of a particular type, and he stresses the role of deduction in reaching conclusions. He insists that deduction is more than a process of summing up and restating known facts or propositions, but a means of discovering new truths and facts. However, his rationalism is not as free from convenient assumptions as he thinks is the case. As Prof. Dewey has pointed out, our keen and penetrating author fails to distinguish between "empiricism" and "sensationalist particularism," and wins easy victories for his style of rationalism. What he does not face is the question how actual personal experience gets converted and translated into rational thought.

Much of the confusion that exists in philosophy today can be traced, further, to lack of any agreement as to the nature of reality and the relation between it and the human mind or the realm of ideas. What is nature, and what makes us sure that our idea of nature is correct?

Prof. Cohen distinguishes between nature and our idea of nature. He cannot believe, he says, that "science creates the sun when it discovers its chemical composition." We cannot, he contends, study mind unless we are familiar with the nature pictured to us by physics, physiology and biology. Psychology is becoming scientific, but precisely because it is built largely on the more exact sciences and their concepts of nature and reality.

The work as a whole, however, is a brilliant and effective defense of reason and of the methods developed by reason in the course of the ages. Prof. Cohen does not treat intuition, tradition, authority, common sense as usurpers and invaders. He recognizes the contributions made by them, severally, to science and to practical human life. But he argues, and proves, that the final appeal,

after all, is to reason, reflective and discursive. It is reason that analyzes and compares supposed intuitions, critically appraises authority, extends and corrects common sense. The notion that reason or intelligence is *nothing but a tool for everyday purposes,* entertained in different forms by Spencer, Bergson et al, he considers shallow and naive. If reason cannot give us glimpses of the higher and finer things, what can? And do we not use reason in dealing with the most abstract conceptions and generalizations?

Those who talk of flashes and sudden revelations, says Prof. Cohen, forget that to the ignorant no such illumination is vouchsafed. Knowledge is their pre-requisite.

I quote a few characteristic sentences from the book which indicate Prof. Cohen's position and mode of thinking:

> "The true method of science is to cure speculative excesses, not by a return to pure experience devoid of all assumptions, but by multiplying through pure logic the number of these assumptions, mathematically deducing their various consequences, and then confronting each one with its rivals and such experimental facts as can be generally established."
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> "Intelligence is the rational organization or distillation of the experience of living. . . . Unless intelligence illumines the meaning of our vital activity, we can make no significant assertion about it nor draw any conclusion from it. . . . No philosophy which stresses formless feeling can throw light on the problem of artistic creation or its intelligent appreciation."
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> "A philosophy which excludes the subject-matter of the special sciences, natural and social, cannot satisfy that interest in the cosmos which has at all times been the heart of philosophic endeavor. . . . Philosophy, seeking the most comprehensive vision, cannot ignore the insight gained by the sciences, but must go forward to envisage their possible synthesis."
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> "If this doctrine that our universe contains something fundamental to which we may point, but which we cannot fully describe, be called mysticism, then mysticism is essential to all intellectual sanity. But if we use the word mysticism to denote this faith in a universe that has ineffable and alogical elements, we cannot too sharply distinguish it from obscurantism. For the former denies our power to know the whole of reality, while the latter holds reality to be definitely revealed to us by non-rational pro-

> cesses. . . . The essential difference between rationalism and obscurantism depends upon whether our guesses or obscure visions do or do not submit to the processes of critical examination and logical clarification."
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> "If the abstract is unreal, reality is of little moment. For what is humanly interesting if not the abstract?"

Let us note here that Prof. Cohen, disagreeing with recent definitions of philosophy, reverts to the Spencerian idea that the business and function of philosophy is to build up a synthetic world-view, or *Weltanschauung*, on the foundations laid and materials provided by the several sciences. The difficulties in the way of such a philosophy are numerous and serious, Prof. Cohen admits, but, he says, difficulties are not vetoes, and if they were treated as such, philosophy would lose its mission and *raison d'etre*. He sums up this matter as follows:

> The sciences grow by constantly correcting their content, and it is the inescapable task of the philosopher to use the invariant principles of the scientific method, to go back to ever more rigorous analysis of the elements or rudiments of our knowledge, to examine the ideals which guide scientific effort, and to anticipate where possible what science may conquer in the future.

There is little essential originality in Prof. Cohen's solid and pregnant volume, but he lays no claim to originality. The importance of his book, at this juncture, lies in its remarkable statement and defense of the role of reason and its clear exposition of the proper methods and procedures of science and scientific philosophy. The erudition displayed by Prof. Cohen is amazing, but it is erudition assimilated, mastered, subordinated to fundamental concepts.

Perhaps the book covers too much ground and is here and there a little inadequate and superficial. Some of the chapters—notably those on biology and psychology—require expansion and elaboration. We must hope that another volume from the same gifted pen will not be delayed too long. The author surely feels that in some instances his brevity caused misunderstanding and misinterpretation of his views even among friendly reviewers.

THE PRINCIPLE OF POLARITY—THEORY AND PRACTICE

It will be interesting and profitable to consider here somewhat critically the principle of polarity as elucidated and defended by Prof. Morris Cohen. Is the principle new to science and philoso-

phy? If so, what does it do for us in matters of practical reform? In the pragmatists' phrase, what difference does it make; or, in the words of James, what is its cash value?

According to Prof. Cohen, the principle is not a new discovery. On the contrary, it is old, "as old as philosophy," for its recognition may be found in the works of most ancient and mediaeval philosophers. Moreover, common sense, we are informed, has always acted in conformity with it after its own crude fashion, though it was not aware of the fact—any more than Moliere's hero was aware of the fact that for forty years he "had spoken prose." Full and intelligent appreciation of the principle is expected, however, to yield large benefits to contemporary thinkers who find it intellectually impossible to associate themselves with doctrinaires and extremists.

To quote Prof. Cohen:

> The indetermination and consequent inconclusiveness of metaphysical and of a good deal of sociological discussion results from uncritically adhering to simple alternatives, instead of resorting to the laborious process of integrating opposite assertions by finding the proper distinctions and qualification.
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> Thus two statements which, taken abstractly, are contradictory may both be true of concrete existence, provided they can be assigned to separate domains or aspects. A plurality of aspects is an essential trait of things in existence.

And the principle itself is thus defined by the professor:

> Opposites such as immediacy and mediation, unity and plurality, the fixed and the flux, substance and function, ideal and real, actual and possible, etc., like the north (positive) and the south (negative) poles of a magnet, all involve each other when applied to any significant entity.

And the author adds:

> Far from overriding the distinctions of understanding, the principle of polarity shows their necessity and proper use.

To the foregoing no exception can be taken. But, in the last analysis, what does the argument amount to? To this simply, that questions generally, if not invariably, have two or more sides, and

that all sides ought to be given due consideration if a just conclusion is to be reached. Well, in the administration of justice this principle, or maxim, is exemplified daily and hourly. In a criminal case, the prosecution and the defense are given practically equal opportunity to persuade the judge and the jury. The judge is an impartial umpire and the jury's guide. The jury is bound and instructed to consider all the evidence without bias and to render its judgment in accordance with the clear weight of the evidence, giving the defendant the benefit of every reasonable doubt. In a civil case, the doctrine of reasonable doubt gives place to that of preponderant evidence merely.

Of course, judges and juries are human and prone to err. Justice not infrequently miscarries. Emotion, prejudice, class or group interest may blind judge and jury alike. But it is to be noted that consciousness of passion and bias is rare. The principle of polarity is not willingly violated. The verdict may be woefully unfair, but those who handed it down do not concede that it is unfair. They are satisfied that they considered all the evidence and reasoned about it logically and candidly.

What is true of legal disputes is true of all other controversies. Take politics, economics, ethics, religion, history. Let us put a number of questions covering a wide and diversified field. Did Jesus of the Gospels ever live, or is he a mythical figure? Was the murder of Cæsar morally justifiable? Did the German emperor and his military advisers will the world-war? Is democracy a possible and feasible form of government? Would the single tax on land values abolish poverty? Is capital punishment just and necessary? Are acquired characters inheritable and inherited? Is Capitalism digging its own grave, as Marx asserted was the case, or has it sufficient virtue and vitality to correct its own mistakes and remedy its own ills? Is effective control, in the public interest, of great and powerful utilities possible, or must utility regulation and control lead to state ownership and operation?

Prof. Cohen will tell us that no political, social, or other question can be settled rightly unless in the process of adjustment the principle of polarity is recognized and respected. But no school, group, or party ever admits that its program or proferred solution is one-sided, short-sighted, ill-considered, superficial. Whether a given solution is sound or unsound cannot be determined by any

general appeal to polarity. It must be determined by reasoning applied to the facts and relevant considerations.

Can we contend that, philosophically speaking, the truth always lies between two opposite views? Would such a principle be valid? Certainly not. The final answer to a question is often either Yes or No. We cannot say that Protection is and is not essential to national development, or that the Single Tax will and will not abolish poverty, or that democracy is and is not feasible and desirable, or that acquired characters are and are not inheritable. We cannot say that this person is and is not guilty of an offence charged, or that the verdict of a jury was and was not just and warranted by the evidence adduced.

The truth may lie in the middle, and it may lie at the extreme end. There is no *à priori* reason for holding in advance where it will be found. Polarity does not excuse jumping at conclusions.

There is, in fact, no royal road to truth. Science and philosophy arrive at truths, or generalizations, by the pedestrian and thorny path of trial, error, verification, re-verification, modification and restatment. What they say to the individual thinker is: "Make sure of your data. Define your problem with precision and care. Weigh your evidence, and form your theory, when ready for that stage, provisionally, inviting criticism and examination. Never be dogmatic, for new facts may come to light that will dictate revision of your theory. Remember that science and philosophy are progressive and dynamic. There is no revelation for either of them. If you start with an assumption, bear that fact in mind, and do not claim that you have proved every point in the argument and every premise, expressed or implied."

These admonitions have the support of human experiences. Polarity does not sum them up sufficiently.

Let me now revert to two of Prof. Cohen's own illustrations and see how he uses polarity. To quote:

> If I say a house is thirty years old, and some one else says it is thirty-one years old, the statements are contradictory in the sense that both cannot possibly be true at the same time and in the same respect. Both statements, however, can certainly be true if we draw a distinction, e.g., thirty-one years since the beginning and thirty years since the completion of its building.

> Sometimes an intellectual dilemma is avoided by rejecting both alternatives. This is illustrated by the old difficulty as to whether language was a human invention or a special revelation. The difficulty was avoided by introducing the concept of natural growth.

Neither illustration strikes me as a happy or apt one. Neither involves the application of the polarity principle. In the case of the house, both statements lacked precision, and an exact and complete statement, if one had been demanded, would have removed the ambiguity and left no room for controversy. In the case of language, neither of the old theories had any scientific validity, while the concept of natural growth was suggested by study and experience, and had no aid from or, indeed, need of the polarity principle.

Prof. Cohen appears to claim more for the principle than it is capable of yielding to science or to life. He must have been misled by a few instances in which polarity does remove difficulties by a sort of synthesis. On the whole, one fails to perceive in his theory any improvement on the Hegelian formula—Thesis, Antithesis, Synthesis. But even this formula should not be stretched unduly or overworked. To repeat, there is no royal road to truth, as Prof. Cohen himself reminds us over and over again.