

The Enlightenment Programme and Karl Popper

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1 Popper's Contributions to the Enlightenment Programme

By the Enlightenment Programme I mean the idea of the 18th century French Enlightenment of learning from scientific progress how to go about making social progress towards world enlightenment.

Three steps need to be got right to put the basic Enlightenment idea into practice correctly:

- (i) The progress-achieving methods of science need to be correctly identified.
- (ii) These methods need to be correctly generalized so that they become fruitfully applicable to any worthwhile, problematic human endeavour, whatever the aims may be, and not just applicable to the endeavour of improving knowledge.
- (iii) The correctly generalized progress-achieving methods then need to be exploited correctly by the great human endeavour of trying to make social progress towards an enlightened, civilized world.

Unfortunately, the *philosophes* of the Enlightenment got all three points disastrously wrong. They failed to capture correctly the progress-achieving methods of natural science (in that they defended inductivist, or at least verificationist, conceptions of science); they failed to generalize these methods properly; and, most disastrously of all, they failed to apply them properly so that humanity might learn how to become more civilized or enlightened by rational means. Instead of applying the generalized progress-achieving methods of science to *social life itself*, so that social progress might be achieved, the *philosophes* sought to apply scientific method merely to *social science*. Reason (as construed by the *philosophes*) got applied, not to the task of making social progress towards an enlightened world, but to the task of making intellectual progress towards greater knowledge about the social world. Social inquiry was developed, not as social methodology or social philosophy, but as social science.

This traditional but botched version of the Enlightenment Programme was immensely influential. It was developed throughout the 19th century by Comte, Marx, Mill and many others, and was built into the institutional structure of academic inquiry in the 20th century with the creation of departments of social science: anthropology, economics, psychology, sociology, linguistics, political science. Academic inquiry as it exists today, devoted primarily to the pursuit of knowledge, is the outcome.

Much of the importance of Karl Popper's work, especially of his first four books, stems from the fact that it does much to correct defects of the traditional, bungled Enlightenment Programme that we have inherited from the 18th century – although Popper does not himself formulate his contribution in these terms. In *The Logic of Scientific Discovery*, Popper goes some way towards correcting step (i) above. Science does not, and cannot, verify its theories. Science makes progress by proposing bold conjectures in response to problems, which are then subjected to sustained attempted empirical refutation. This falsificationist conception of scientific method is then generalized, in accordance with step (ii) above, to form Popper's conception of (critical) rationality, a general methodology for solving problems or making progress. As Popper puts it in *The Logic of Scientific Discovery* "inter-subjective testing is merely a very important aspect of the more general idea of inter-subjective criticism, or in other words, of the idea of mutual

rational control by critical discussion" (Popper, 1959, 44, n *1: see also Popper, 1963, 193-200; 1972, 119 & 243).

In *The Open Society and Its Enemies* and *The Poverty of Historicism* Popper applies critical rationalism to problems of civilization, in accordance with step (iii) above. From all the riches of these two books, I pick just two points, two corrections Popper makes to ideas inherited from the Enlightenment.

First, there is Popper's devastating criticism of historicism. Pro-naturalistic historicism is the outcome of an especially defective attempt to put step (iii) of the Enlightenment Programme into practice. If one seeks to develop social science alongside natural science, and if one takes the capacity of Newtonian science to predict states of the solar system far into the future as a paradigmatic achievement of natural science, one may be misled into holding that the proper task of social science is to discover laws governing social evolution. Historicism is the doctrine that such laws exist. Popper decisively demolishes historicism, and demolishes the above rationale for adopting historicism. In doing so, he demolishes one influential and especially defective version of the traditional Enlightenment Programme.

Second, Popper's revolutionary contributions to steps (i) and (ii) of the Enlightenment Programme lead to a new idea as to what a "rational society" might be, one that is fully in accordance with liberal traditions, and not entirely at odds with such traditions. A major objection to the Enlightenment programme is overcome. If one upholds pre-Popperian conceptions of science and reason, and construes reason, in particular, as a set of rules which determine what one must accept or do, the very idea of "the rational society" is abhorrent. It can amount to little more than a tyranny of reason, a society in which spontaneity and freedom are crushed by the requirement that the rules of reason be obeyed. When viewed from the perspective of Popper's falsificationism and critical rationalism, however, all this changes dramatically.

Popper's falsificationist conception of science requires that theories are *severely* tested empirically. But, in order to make sense of this idea of *severe* testing, we need to see the experimentalist as having at least the germ of an idea for a rival theory up his sleeve (otherwise testing might degenerate into performing essentially the same experiment again and again). This means experiments are always *crucial experiments*, attempts at trying to decide between two competing theories. Theoretical pluralism is necessary for science to be genuinely empirical. And, more generally (implementing step (ii)), in order to *criticize* an idea, one needs to have a rival idea in mind. Rationality, as construed by Popper, requires plurality of ideas, values, ways of life. Thus, for Popper, the rational society *is* the open society, the society in which diverse ways of life can flourish. In short, given pre-Popperian conceptions of science and reason, the Enlightenment idea of creating a rational society guides one towards a kind of tyranny of reason, the very opposite of a free or open society. Adopt improved Popperian conceptions of science and reason, and the Enlightenment ideal of the rational society is one and the same as the ideal of the free, open society. At a stroke, a major objection to the Enlightenment Programme is overcome.

Despite the enormous improvements that Popper has made to the traditional Enlightenment Programme, his version of the Programme is still defective. I now discuss two ways in which Popper's version of the Programme needs to be improved. Both involve changing dramatically Popper's conception of social science. It is important to note that Popper defends a highly traditional conception of social science. According to him, the methods of social science are broadly the same as those of natural science (Popper, 1961, 61-63). But it is this key element of

the 18th century Enlightenment, so profoundly influential over subsequent developments, that constitutes the traditional Enlightenment's greatest blunder. Popper endorses, and fails to correct, this blunder.

2 The New Enlightenment, First Version

Let us, then, consider again the basic Enlightenment idea of learning from scientific progress how to go about making social progress towards an enlightened world. And let us consider what form academic inquiry ought to take granted that it has, as a basic aim, to help promote human welfare, help humanity learn how to become more enlightened or civilized, and granted, too, that it seeks to implement the three steps of the Enlightenment Programme, (i) to (iii), with which we began.

As a minor improvement to Popper's critical rationalism, I suggest we take the following as basic "rules of reason", arrived at by generalizing the methods of science (in accordance with step (ii)):-

1. Articulate, and try to improve the articulation of, the problem to be solved.
2. Propose and critically assess possible solutions.
3. When necessary, break up the basic problem to be solved into a number of preliminary, simpler, analogous, subordinate or specialized problems (to be tackled in accordance with rules 1 and 2), in an attempt to work gradually towards a solution to the basic problem to be solved.
4. Interconnect attempts to solve basic and specialized problems, so that basic problem-solving may guide, and be guided by, specialized problem-solving (see Maxwell, 1980, 20-21; 1984, 67-75).

Popper's critical rationalism consists of rules 1 and 2; problem-solving rationality (as 1 to 4 may be called) improves on this by adding on rules 3 and 4, which become relevant when we are confronted by some especially recalcitrant problem - such as the problem of understanding the nature of the universe, or the problem of creating a civilized world - which can only be solved gradually and progressively, bit by bit, and not all at once. Popper was too hostile to specialization to emphasize the need for rule 3; he did not appreciate that the evils of specialization can be counteracted by implementing rule 4.

Two preliminary points now need to be made.

First, in order to create a more civilized, enlightened world, the problems that we need to solve are, fundamentally, problems of *living* rather than problems of *knowledge*. It is what we *do* (or refrain from doing) that matters, and not just what we *know*. Even where new knowledge or technology is needed, in connection with agriculture or medicine for example, it is always what this enables us to *do* that solves the problem of living.

Second, in order to make progress towards a sustainable, civilized world we need to learn how to resolve our conflicts in more cooperative ways than at present. A group acts cooperatively in so far as all members of the group share responsibility for what is done, and for deciding what is done, proposals for action, for resolution of problems and conflicts, being judged on their merits from the standpoint of the interests of the members of the group (or the group as a whole), there being no permanent leadership or delegation of power. Competition is not opposed to cooperation if it proceeds within a framework of cooperation, as it does ideally within science. There are of course degrees of cooperativeness, from its absence, all out violence, at one extreme, to settling of conflicts by means of threat, to agreed procedures such as voting, to bargaining, to all out cooperativeness at the other extreme. If we are to develop a sustainable, civilized world we need to move progressively away from the violent end of this

spectrum towards the cooperative end.

Granted, then, that the task of academic inquiry is to put the four rules of problem-solving rationality into practice in such a way as to help humanity learn how to make progress towards a civilized, enlightened world, the primary intellectual tasks must be:

1. To articulate, and try to improve the articulation of, those social problems of living we need to solve in order to make progress towards a better world.
2. To propose and critically assess possible, and actual, increasingly cooperative social actions - these actions to be assessed for their capacity to resolve human problems and conflicts, thus enhancing the quality of human life.

These intellectually fundamental tasks are undertaken by social inquiry, at the heart of the academic enterprise. Social inquiry also has the task of promoting increasingly cooperatively rational tackling of problems of living in the social world - in such contexts as politics, commerce, international affairs, industry, agriculture, the media, the law, education.

Academic inquiry also needs, of course, to implement the third rule of rational problem solving; that is, it needs:

3. To break up the basic problems of living into preliminary, simpler, analogous, subordinate, specialized problems of knowledge and technology, in an attempt to work gradually towards solutions to the basic problems of living.

But, in order to ensure that specialized and basic problem solving keep in contact with one another, the fourth rule of rational problem solving also needs to be implemented; that is, academic inquiry needs:

4. To interconnect attempts to solve basic and specialized problems, so that basic problem-solving may guide, and be guided by, specialized problem-solving.

There are a number of points to note about this "rational problem solving" conception of academic inquiry. Social inquiry is not, primarily, social science; it has, rather, the intellectually basic task of engaging in, and promoting in the social world, increasingly cooperatively rational tackling of conflicts and problems of living (see Maxwell, 1984, 162-166 for further details). Social inquiry, so conceived, is actually intellectually more fundamental than natural science (which seeks to solve subordinate problems of knowledge and understanding). Academic inquiry, in seeking to promote cooperatively rational problem solving in the social world, must engage in a two-way exchange of ideas, arguments, experiences and information with the social world. The thinking, the problem solving, that really matters, that is really fundamental, is the thinking that we engage in, individually, socially and institutionally, as we live; the whole of academic inquiry is, in a sense, a specialized part of this, created in accordance with rule 3, but also being required to implement rule 4 (so that social and academic problem solving may influence each other). Academic inquiry, on this model, is a kind of peoples' civil service, doing openly for the public what actual civil services are supposed to do, in secret, for governments. Academic inquiry needs just sufficient power to retain its independence, to resist pressures from government, industry, the media, religious authorities, and public opinion, but no more. Academia proposes to, argues with, learns from, attempts to teach, and criticizes all sectors of the social world, but does not instruct or dictate. It is an intellectual resource for the public, not an intellectual bully.

The basic intellectual aim of inquiry may be said to be, not knowledge, but wisdom - wisdom being understood to be the desire, the active endeavour and the capacity to realize what is desirable and of value in life, for oneself and others ("realize" meaning both "to apprehend" and "to make real"). Wisdom includes knowledge, know-how and understanding but goes beyond

them in also including the desire and active striving for what is of value, the ability to experience value, actually and potentially, in the circumstances of life, the capacity to help realize what is of value for oneself and others, the capacity to help solve those problems of living that need to be solved if what is of value is to be realized, the capacity to use and develop knowledge, technology and understanding as needed for the realization of value. Wisdom, like knowledge, can be conceived of not only in personal terms but also in institutional or social terms. Thus, the basic aim of academic inquiry, according to the view being indicated here, is to help us develop wiser ways of living, wiser institutions, customs and social relations, a wiser world.

It is important to appreciate that the conception of academic inquiry that we are considering is designed to help us to see, to know and to understand, for their own sake, just as much as it is designed to help us solve practical problems of living. It might seem that social inquiry, in articulating problems of living and proposing possible solutions, has only a severely practical purpose. But engaging in this intellectual activity of articulating personal and social problems of living is just what we need to do if we are to develop a good empathic or "personalistic" understanding of our fellow human beings (and of ourselves) - a kind of understanding that can do justice to our humanity, to what is of value, potentially and actually, in our lives. In order to understand another person *as a person* (as opposed to a biological or physical system) I need to be able, in imagination, to see, desire, fear, believe, experience and suffer what the other person sees, desires, etc. I need to be able, in imagination, to enter into the other person's world; that is, I need to be able to understand his problems of living as he understands them, and I need also, perhaps, to understand a more objective version of these problems. In giving intellectual priority to the tasks of articulating problems of living and exploring possible solutions, social inquiry thereby gives intellectual priority to the development of a kind of understanding that people can acquire of one another that is of great intrinsic value. In my view, indeed, personalistic understanding is essential to the development of our humanity, even to the development of consciousness. Our being able to understand each other in this way is also essential for cooperatively rational action.

And it is essential for science. It is only because scientists can enter imaginatively into one another's problems and research projects that objective scientific knowledge can develop. At least two rather different motives exist for trying to see the world as another sees it: one may seek to improve one's knowledge of the other person; or one may seek to improve one's knowledge of the world, it being possible that the other person has something to contribute to one's own knowledge. Scientific knowledge arises as a result of the latter use of personalistic understanding - scientific knowledge being, in part, the product of endless acts of personalistic understanding between scientists (with the personalistic element largely suppressed so that it becomes invisible). It is hardly too much to say that almost all that is of value in human life is based on personalistic understanding. (For further details see Maxwell, 1984, 172-89 and 264-75; 2001, chs. 5-7).

The basic intellectual aim of the kind of inquiry we are considering is to devote reason to the discovery of what is of value in life. This immediately carries with it the consequence that the arts have a vital *rational* contribution to make to inquiry, as revelations of value, as imaginative explorations of possibilities, desirable or disastrous, or as vehicles for the criticism of fraudulent values through comedy, satire or tragedy. Literature and drama also have a rational role to play in enhancing our ability to understand others personalistically, as a result of identifying imaginatively with fictional characters - literature in this respect merging into biography, documentary and history. Literary criticism bridges the gap between literature and social

inquiry, and is more concerned with the *content* of literature than the means by which it achieves its effects.

Another important consequence flows from the point that the basic aim of inquiry is to help us discover what is of value, namely that our feelings and desires have a vital rational role to play within the intellectual domain of inquiry. If we are to discover for ourselves what is of value, then we must attend to our feelings and desires. But not everything that feels good is good, and not everything that we desire is desirable. Rationality requires that feelings and desires take fact, knowledge and logic into account, just as it requires that priorities for scientific research take feelings and desires into account. In insisting on this kind of interplay between feelings and desires on the one hand, knowledge and understanding on the other, the conception of inquiry that we are considering resolves the conflict between rationalism and romanticism, and helps us to acquire what we need if we are to contribute to building civilization: mindful hearts and heartfelt minds.

All this differs dramatically from academic inquiry as it mostly exists at present, devoted primarily to the pursuit of knowledge. And it differs from Popper's conceptions of social inquiry, and academic inquiry more generally. It deserves to be noted that, when judged from the standpoint of promoting human welfare, a kind of inquiry that gives priority to the pursuit of knowledge violates *three* of the above four rules of reason. Rules 1 and 2 are violated because the intellectual activities of articulating problems of living, proposing and criticizing possible solutions, cannot proceed within the context of the pursuit of knowledge. And once rules 1 and 2 are not implemented, rule 4 cannot be either.

3 The New Enlightenment, Second Version

I come now to a rather more radical revision of Popper's version of the Enlightenment Programme. This begins with a revision of step (i) of the Programme. Popper's falsificationism is untenable, and needs to be replaced by a conception of scientific method which I have called *aim-oriented empiricism* (AOE). The reason for this revision can be summarized as follows. Physics only considers (and only accepts) theories that are sufficiently simple, unified or explanatory, and this means that the methods of physics make a persistent metaphysical assumption about the universe, to the effect that it has a simple, unified, explanatory dynamic structure. That such a persistent metaphysical assumption is made by physics, as a part of (conjectural) scientific knowledge, contradicts, and refutes, falsificationism. An improved conception of scientific method is required.

In *The Logic of Scientific Discovery*, Popper claims that the more falsifiable a theory is, so the greater its degree of simplicity. (There is a second method for assessing degrees of simplicity, in terms of number of observation statements required to falsify the theories in question, but Popper stresses that if the two methods clash, it is the first that takes precedence.) It is easy to see that Popper's proposal fails. Given a reasonably simple scientific theory, T, one can readily increase the falsifiability of T by adding on an independently testable hypotheses, h_1 , to form the new theory, $T + h_1$. This new theory will be more falsifiable than T but, in general, will be drastically less simple. And one can make the situation even worse, by adding on as many independently testable hypotheses as one pleases, h_2 , h_3 and so on, to form new theories $T + h_1 + h_2 + h_3 + \dots$, as highly empirically falsifiable and as drastically lacking in simplicity, as one pleases. Thus simplicity cannot be equated with falsifiability.

And there is a further, even more devastating point. Popper's methodological rules favour $T + h_1 + h_2 + h_3$ over T, especially if h_1 , h_2 and h_3 have been severely tested, and corroborated.

But in scientific practice, $T + h_1 + h_2 + h_3$ would never even be considered, however highly corroborated it might be if considered, because of its extreme lack of simplicity or unity, its grossly *ad hoc* character. There is here a fundamental flaw in the central doctrine of *The Logic of Scientific Discovery*.

Later, in *Conjectures and Refutations* (1963), Popper put forward a new methodological principle which, when added to those of the earlier book, succeeds in excluding theories such as $T + h_1 + h_2 + h_3$ from scientific consideration. This principle states that a new theory, in order to be acceptable, "should proceed from some *simple, new, and powerful, unifying idea* about some connection or relation (such as gravitational attraction) between hitherto unconnected things (such as planets and apples) or facts (such as inertial and gravitational mass) or new "theoretical entities" (such as field and particles)" (Popper, 1963, 241). $T + h_1 + h_2 + h_3$ does not "proceed from some *simple, new and powerful, unifying idea*" and is to be rejected on that account, even if more highly corroborated than T.

But the adoption of this "requirement of simplicity" (as Popper calls it) as a basic methodological principle of science has the effect of permanently excluding from science all *ad hoc* theories (such as $T + h_1 + h_2 + h_3$) that fail to satisfy the principle, however empirically successful such theories might be if considered. This amounts to assuming permanently that the universe is such that no *ad hoc* theory, that fails to satisfy Popper's principle of simplicity, is true. It amounts to accepting, as a permanent item of scientific knowledge, the substantial metaphysical thesis that the universe is non-*ad hoc*, in the sense that no theory that fails to satisfy Popper's principle of simplicity is true. But this clashes with Popper's criterion of demarcation: that no unfalsifiable, metaphysical thesis is to be accepted as a part of scientific knowledge.

It is, in fact, important that Popper's criterion of demarcation is rejected, and the metaphysical thesis of non-*ad hocness* is explicitly acknowledged to be a part of scientific knowledge. The thesis, in the form in which it is implicitly adopted at any given stage in the development of science, may well be false. Scientific progress may require that it be modified. The thesis needs to be made explicit, in other words, for good Popperian reasons, namely, so that it can be critically assessed, and perhaps improved. As long as Popper's demarcation criterion is upheld, the metaphysical thesis must remain implicit within science, and hence immune to criticism.

As I have argued at length elsewhere (Maxwell, 1998; see also Maxwell, 1974; 1984, ch. 9; 1993, 1999; 2001; 2002b; 2004; 2005), in order to facilitate criticism and improvement of metaphysical theses implicit in persistent scientific rejection of *ad hoc*, disunified physical theories, we need to reject Popper's falsificationism and adopt AOE instead, a view which construes science as accepting, as a part of (conjectural) scientific knowledge, a hierarchy of metaphysical theses concerning the comprehensibility and knowability of the universe, these theses becoming increasingly insubstantial as one goes up the hierarchy, and thus becoming increasingly likely to be true. At any level in this hierarchy of theses, that thesis is accepted which *either* (a) is such that its truth is a necessary condition for the acquisition of knowledge to be possible at all, *or* is such that (b) it is more nearly compatible with the best available thesis immediately above in the hierarchy and (c) it appears to be more fruitful from the standpoint of promoting the growth of empirical knowledge than any rival. Those physical theories are accepted which (a) meet with sufficient empirical success, and (b) are sufficiently in accord with the best available metaphysical thesis at the bottom of the hierarchy of theses. Associated with each metaphysical thesis, M, there is a methodological principle which asserts: accept that thesis or theory lower down in the hierarchy which best accords with M.

If there is a clash between a physical theory and experimental result, and the result has

survived severe, sustained critical, experimental scrutiny, then the theory is, in general, held to be false. But there is always the possibility that the fault lies, not with the theory, but with the experimental result, and it is the latter that needs to be rejected. Likewise, given a dramatic clash between theory and the best available metaphysical thesis at the bottom of the hierarchy of theses then, in general, the theory will be rejected (whatever its empirical success might be) on the grounds that it is too *ad hoc* and disunified to be accepted. It is always possible, however, that the fault may lie with the metaphysical thesis rather than the physical theory; the theory may be accepted, and the metaphysical thesis may be revised. This is likely to happen if the theory (a) has met with great empirical success and (b) accords with that metaphysical thesis one up in the hierarchy of theses. In this way, according to AOE, as physics proceeds, clashes between a physical theory and the metaphysical thesis at the bottom of the hierarchy of theses in general results in the theory being rejected, but will, on occasions, result in the metaphysical thesis being revised and the theory being accepted. Examples of such revisions taken from the history of physics are: rejection of the corpuscular hypothesis (which clashes with Newtonian theory); rejection of the view that nature consists of point-atoms interacting by means of rigid, spherically-symmetrical forces (which clashes with Maxwellian electrodynamics given its field interpretation, and special relativity); rejection of the view that nature consists of a self-interacting classical field (which clashes with quantum theory). Metaphysical theses higher up in the hierarchy survive such revisions of theses at the bottom of the hierarchy. The basic idea of this hierarchical view is to concentrate criticism and revision where it seems most likely to be needed, namely low down in the hierarchy of theses. In this way, a relatively permanent, unproblematic framework of assumptions and associated methods is created within which much more specific, substantial and problematic assumptions and methods can be revised in the light of the empirical success and failure of associated research programmes. As theoretical knowledge improves, assumptions and associated methods improve as well: knowledge-about-how-to-improve-knowledge is improved. There is something like positive feedback between improving knowledge, and improving assumptions and methods, or aims and methods, the methodological key, according to this view, to the immense success of modern science. (For further details see Maxwell, 1998; see also 1974; 1984, ch. 9; 1993, 1999; 2001; 2002b; 2004; 2005.)

This hierarchical, aim-oriented empiricist conception of scientific method can be generalized, in accordance with step (ii) of the Enlightenment Programme, to form a new conception of rationality fruitfully applicable to any worthwhile human endeavour with problematic aims. As we have in effect just seen, a basic and highly problematic aim of science is to discover in what way (and to what extent) the universe is comprehensible, it being presupposed that it is comprehensible in some way or another, to some extent. Precisely because of the highly problematic character of this aim, we need to represent it as a hierarchy of aims, increasingly unspecific and unproblematic as we go up the hierarchy, thus creating a relatively permanent framework of unproblematic aims and associated methods within which more specific and problematic aims and associated methods can be revised and, we may hope, improved, as we proceed, in the light of empirical success and failure.

But it is not just in science that aims are problematic; this is the case in life too, either because different aims conflict, or because what we believe to be desirable and realizable lacks one or other of these features, or both. Above all, the aim of creating global civilization is inherently and profoundly problematic. Quite generally, then, and not just in science, whenever we pursue a problematic aim we need first, to acknowledge the aim; then we need to represent it as a

hierarchy of aims, from the specific and problematic at the bottom of the hierarchy, to the general and unproblematic at the top. In this way we provide ourselves with a framework within which we may improve more or less specific and problematic aims and methods as we proceed, learning from success and failure in practice what it is that is both of most value and realizable. Such an "aim-oriented" conception of rationality is the proper generalization of the aim-oriented, progress-achieving methods of science (see Maxwell, 1976; 1984, ch. 5; and 2001, ch. 9; 2004, ch. 3).

Any conception of rationality which systematically leads us astray must be defective. But any conception of rationality, such as Popper's critical rationalism, which does not include explicit means for the *improvement* of aims, must systematically lead us astray. It will do so whenever we fail to choose that aim that is in our best interests or, more seriously, whenever we misrepresent our aim - as we are likely to do whenever aims are problematic. In these circumstances, the more "rationally" we pursue the aim we acknowledge, the worse off we will be. Systematically, such conceptions of rationality, which do not include provisions for improving problematic aims, are a hindrance rather than a help; they are, in short, defective. (Science specifically, and academia more generally, at present misrepresent basic aims: see Maxwell, 1976; 1984; 2002a; 2004.)

AOE and its generalization, aim-oriented rationality (AOR), incorporate all the good points of Popper's falsificationist conception of science and its generalization, critical rationalism, indicated above, but also improve on Popper's notions, in being designed to help science and other worthwhile endeavours progressively improve problematic aims and methods.

We come now to step (iii) of the new Enlightenment Programme. The task, here, is to help humanity gradually get more AOR into diverse aspects of social and institutional life - personal, political, economic, educational, international - so that humanity may gradually learn how to make progress towards an enlightened world. Social inquiry, in taking up this task, needs to be pursued as social *methodology* or social *philosophy*. What the philosophy of science is to science, as conceived by AOE, so sociology is to the social world: it has the task of helping diverse valuable human endeavours and institutions gradually improve aims and methods so that the world may make social progress towards global enlightenment. (The sociology of science, as a special case, is one and the same thing as the philosophy of science.) And a basic task of academic inquiry, more generally, becomes to help humanity solve its problems of living in increasingly rational, cooperative, enlightened ways, thus helping humanity become more civilized. The basic aim of academic inquiry becomes, as I have already said, to promote the growth of *wisdom*. Those parts of academic inquiry devoted to improving knowledge, understanding and technological know-how contribute to the growth of wisdom. The New Enlightenment Programme thus has dramatic and far reaching implications for academic inquiry, for almost every branch and aspect of science and the humanities, for its overall character and structure, its overall aims and methods, and its relationship to the rest of the social world. (For further details see Maxwell, 1976, 1977, 1980, 1987, 1991, 1992a, 1992b, 1997, 1998, 2000a, 2000b, 2001, 2002a, 2002b, 2002c, and especially 1984 and 2004.)

As I have already remarked, the aim of achieving global civilization is inherently problematic. This means, according to AOR, that we need to represent the aim at a number of levels, from the specific and highly problematic to the unspecific and unproblematic. Thus, at a fairly specific level, we might, for example, specify civilization to be a state of affairs in which there is an end to war, dictatorships, population growth, extreme inequalities of wealth, and the establishment of democratic, liberal world government and a sustainable world industry and agriculture. At a

rather more general level we might specify civilization to be a state of affairs in which everyone shares equally in enjoying, sustaining and creating what is of value in life *in so far as this is possible*. And at a more general level still, we might specify civilization to be that ideal, realizable state of affairs we ought to try to achieve in the long term.

As a result of building into our institutions and social life such a hierarchical structure of aims and associated methods, we create a framework within which it becomes possible for us progressively to improve our real-life aims and methods in increasingly cooperative ways as we live. Diverse philosophies of life - diverse religious, political, economic and moral views - may be cooperatively developed, assessed and tested against the experience of personal and social life. It becomes possible progressively to improve diverse *philosophies of life* (diverse views about what is of value in life and how it is to be realized) much as *theories* are progressively and cooperatively improved in science.

AOR is especially relevant when it comes to resolving conflicts cooperatively. If two groups have partly conflicting aims but wish to discover the best resolution of the conflict, AOR helps in requiring of those involved that they represent aims at a level of sufficient imprecision for agreement to be possible, thus creating an agreed framework within which disagreements may be explored and resolved. AOR cannot, of itself, combat non-cooperativeness, or induce a desire for cooperativeness; it can however facilitate the cooperative resolution of conflicts if the desire for this exists. In facilitating the cooperative resolution of conflicts in this way, AOR can, in the long term, encourage the desire for cooperation to grow (if only because it encourages belief in the possibility of cooperation).

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