

*Nicholas Maxwell*

## **THE MENACE OF SCIENCE WITHOUT CIVILIZATION: FROM KNOWLEDGE TO WISDOM**

### **ABSTRACT**

We are in a state of impending crisis. And the fault lies in part with academia. For two centuries or so, academia has been devoted to the pursuit of knowledge and technological know-how. This has enormously increased our power to act which has, in turn, brought us both all the great benefits of the modern world and the crises we now face. Modern science and technology have made possible modern industry and agriculture, the explosive growth of the world's population, global warming, modern armaments and the lethal character of modern warfare, destruction of natural habitats and rapid extinction of species, immense inequalities of wealth and power across the globe, pollution of earth, sea and air, even the Aids epidemic (Aids being spread by modern travel). All these global problems have arisen because some of us have acquired unprecedented powers to act, via science and technology, without also acquiring the capacity to act wisely. We urgently need to bring about a revolution in universities so that the basic intellectual aim becomes, not knowledge merely, but rather wisdom—wisdom being the capacity to realize what is of value in life, for oneself and others, thus including knowledge and technological know-how, but much else besides. The revolution we require would put problems of living at the heart of the academic enterprise, the pursuit of knowledge emerging out of, and feeding back into, the fundamental intellectual activity of proposing and critically assessing possible actions, policies, political programs, from the standpoint of their capacity to help solve problems of living. This revolution would affect almost every branch and aspect of academic inquiry.

**Key words:** sciences; civilization; knowledge; wisdom.

### **INTRODUCTION**

Humanity is in deep trouble. We face grave global problems. Here are ten.

1. Global warming
2. Lethal character of modern warfare
3. Threat from modern armaments, conventional and nuclear
4. Destruction of natural habitats and rapid extinction of species

5. Depletion of natural resources, such as oil
6. Rapid population growth
7. Pollution of earth, sea and air
8. Vast inequalities of wealth and power around the globe
9. The Aids epidemic
10. Annihilation of languages and traditional ways of life

All these global problems have been made possible by science. Modern science and technology have of course brought great benefits to humanity. They have made the modern world possible. But they have also made possible all these grave global problems.

For science and technology make possible modern industry and agriculture, modern medicine and hygiene, which in turn make possible global warming, pollution and depletion of natural resources, population growth, habitat destruction and extinction of species, modern armaments and the lethal character of modern war, inequalities of wealth and power, and even the Aids epidemic (Aids being spread by modern travel).

The immense intellectual success of science and technological research has led to an enormous increase in our power to act—for some of us at least. This often has good consequences but, in the absence of wisdom, can have bad consequences as well, as the above ten problems highlight, either because of bad unintended consequences of our actions, or because of intended bad consequences, as in war and terrorism.

Some blame science for our problems, but this profoundly misses the point. What we suffer from, rather, is science and technological research pursued in a way that is dissociated from a more fundamental concern to help humanity solve problems of living in increasingly cooperatively rational ways.

This, then, is my basic claim. We have a long tradition of academic inquiry devoted to the pursuit of knowledge, with science and technological research at its core. Judged from the standpoint of promoting human welfare, this is damagingly irrational. It has made our current global problems possible. We need a new, more rigorous kind of inquiry that gives intellectual priority to problems of living over problems of knowledge, and is devoted to the pursuit of wisdom—wisdom being the capacity to realize what is of value in life, for oneself and others, thus including knowledge and technological know-how, but much else besides. We urgently need to bring about an intellectual revolution in our universities and other institutions of learning and research.

One might sum it up like this. Humanity is confronted with two great problems of learning: (1) learning about the nature of the universe and ourselves as a part of the universe, and (2) learning how to make progress towards a good, civilized world—or at least as good a world as possible. We have solved the first problem. We did that when we created modern science in the 17th century. That is not to say, of course, that we know everything that there is to be known.

Rather, it is to say that we discovered how to put into practice a *method* which has enabled us ever since massively to increase and improve our knowledge and understanding of the universe, to a quite astonishing extent. But we have not solved the second problem. And it is that combination of solving the first problem and failing to solve the second one that puts us into a situation of unprecedented danger. It has led to an enormous increase in our capacity to *act* without a concomitant increase in our capacity to act *wisely*. The above ten global problems, and the threat they pose to the future welfare of humanity, are the outcome.

But, instead of blaming natural science for our troubles, what we need to do, rather, is *learn* from our successful solution to the first great problem of learning how to solve the second problem. Science has something of great importance to teach us about how to set about making progress towards a genuinely civilized world rather more successfully than we have managed so far. Natural science, one might say, contains the methodological key to the salvation of humanity. That, at least, is my thesis and argument.

I shall proceed by means of the following seven points.

1. I shall distinguish two kinds of inquiry, which I shall call *knowledge-inquiry* and *wisdom-inquiry*. Both have, as a basic aim, to help promote human welfare by intellectual, technological and educational means.

2. Knowledge-inquiry is what we have inherited from the past; it is still profoundly influential, the dominant kind of inquiry in universities and research institutions today, although not everything that goes on in academia accords with its edicts.

3. It is profoundly and damagingly irrational, in a wholesale, structural way. Our current global problems are the outcome, together with our current incapacity to solve them effectively, intelligently and humanely.

4. Wisdom-inquiry results when knowledge-inquiry is modified just sufficiently to cure it of its irrationality.

5. Whereas knowledge-inquiry helped generate our current global problems, and fails to equip us with the means to solve them, wisdom-inquiry, because of its greater rationality, would, if put into practice, help us to solve our problems effectively and wisely.

6. I shall spell out two arguments in support of the claim that we need to put wisdom-inquiry into academic practice. These appeal to:

(i) Problem-solving rationality

(ii) Aim-pursuing rationality

7. Conclusion: knowledge-inquiry needs to be transformed so that it becomes wisdom-inquiry. We urgently need to bring about an academic revolution affecting, to a greater or lesser extent, every branch and aspect of academia, and the way academia is related to the rest of the human world, so that the basic

intellectual task becomes to help humanity make progress towards as good, wise, civilized a world as possible.

### FIRST ARGUMENT: PROBLEM-SOLVING RATIONALITY

I must now explain, very briefly, what I take *knowledge-inquiry* to be. It can be put like this. A basic social or humanitarian aim of inquiry is to help promote human welfare by intellectual, technological and educational means. In pursuit of this aim, inquiry must, however, in the first instance, acquire reliable knowledge and technological know how. Academia must devote itself to solving problems of knowledge. Once knowledge is acquired, it can be applied to help solve social problems.

Values, political ideas and programs, feelings and desires, policies, philosophies of life, discussion of problems of living and how they are to be resolved, must all be excluded from the intellectual domain of inquiry, which is restricted to the acquisition of knowledge—although, of course, knowledge about these things can be acquired, in the social sciences and humanities. Everything is excluded from the intellectual domain of inquiry that is not factual knowledge, or required for the assessment of claims to knowledge: results of observation and experiment, critical assessment of evidence and theory, valid argument, logic and mathematics.<sup>1</sup>

This is the kind of inquiry we have inherited from the past. Not everything that goes on in academia accords with this conception of inquiry, and in the last decade or so, increasingly, as I shall indicate, work has been pursued at odds with this view. Nevertheless, knowledge-inquiry of this type still dominates academia today.<sup>2</sup>

Postmodernists, social constructivists and others, opposed to the very idea of reason and rational inquiry, have been critical of what knowledge-inquiry represents.<sup>3</sup> Such criticisms are the very opposite of mine. What is wrong with knowledge-inquiry is not its embodiment of reason but, quite the contrary, its gross and damaging *irrationality*. We suffer, not from too much rationality, but from not enough.

But what do I mean by “rationality”? As I use the term here, rationality appeals to the existence of methods, strategies or rules which, if put into practice, other things being equal, give us our best chance of solving our problems, achieving our aims. The rules of reason do not tell you precisely what to do, and do not guarantee success. They help us discover and decide what is really in our

<sup>1</sup> For a much more detailed characterization of knowledge-inquiry—or “the philosophy of knowledge”—see my *From Knowledge to Wisdom*, Blackwell, Oxford, 1984, ch. 2; 2nd ed., revised and extended, Pentire Press, London, 2007.

<sup>2</sup> For a detailed demonstration of this point, see *From Knowledge to Wisdom*, ch. 6. The 2nd edition shows that not much has changed since the 1st edition was published.

<sup>3</sup> See *From Knowledge to Wisdom*, 2nd ed., pp. 40–43.

best interests, and do not decide for us. They are meta-methods. They presume we can already put a wide range of methods successfully into practice, and tell us how best to marshal what we can already do in order to solve new problems.

Here are four absolutely elementary, almost banal rules of reason:

(1) Articulate, and try to improve the articulation of, the problem to be solved.

(2) Propose and critically assess possible solutions.<sup>4</sup>

(3) If the problem to be solved is especially difficult, break it up into easier-to-solve, preliminary, specialized, subordinate problems, in an attempt to work gradually towards the solution to the basic problem to be solved.

(4) But in this case ensure that basic and specialized problem-solving interact with one another, so that each influences the other.<sup>5</sup>

Any problem-solving endeavour that persistently violates one or other of these four rules is, to that extent, irrational. Its problem-solving capacity will suffer as a result. Knowledge-inquiry is so damagingly irrational that it violates, in a persistent, structural way, *three* of these four elementary rules of reason. It is this long-standing, wholesale irrationality of academia that is, in part, responsible for the development of our current global problems, and our incapacity to tackle them effectively and wisely.

Granted that the fundamental task of academia is to help promote human welfare—help people realize what is of value to them in life—by intellectual and educational means, the basic *problems* that academia has to help us solve are problems of *living*, problems of *action*, not problems of *knowledge*. It is what we *do*, or refrain from doing, that really matters. Even when new knowledge is needed, as it is in medicine or agriculture for example, it is what this knowledge enables us to *do*, that achieves what is of value, not the knowledge as such (except when knowledge is itself of value). Furthermore, in order to realize what is of value in life more successfully than we do at present, we need to discover how to tackle our problems of living in more *cooperatively rational ways* than we do at present.

Thus academia, in order to promote human welfare rationally, must give intellectual priority to the tasks of (1) articulating problems of living, and (2) proposing and critically assessing possible and actual (increasingly cooperative)

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<sup>4</sup> “the one method of all *rational discussion* ... is that of stating one’s problem clearly and examining its various proposed possible solutions *critically*” K. Popper, *The Logic of Scientific Discovery*, Hutchinson, London, 1959, p. 16. Popper was too opposed to specialization to emphasize rule (3); he did not see that the evils of over-specialization can be counteracted by implementing rule (4). For a discussion of Popper’s opposition to specialization, see my *Popper’s Paradoxical Pursuit of Natural Philosophy*, in *Cambridge Companion to Popper*, edited by J. Shearmur and G. Stokes, Cambridge University Press, 2013; available online at <http://philpapers.org/archive/MAXPPP.1.doc>

<sup>5</sup> For a more detailed discussion of methods of rational problem-solving, see *From Knowledge to Wisdom*, ch. 4.

*actions*—legislation, institutional changes, policy, political programs, ways of living, philosophies of life—to be assessed from the standpoint of their capacity, if implemented, to help people realize what is of value in life.<sup>6</sup> Academia will need, of course, (3) to tackle specialized problems of knowledge and technological know-how, but will also need (4) to ensure that thought that tackles problems of living influences, and is influenced by, specialized research.

Academia as it mostly exists at present puts rule (3) into practice to splendid effect. The outcome is the most striking feature of academia as it exists today: an intricate tree-like structure of specialized disciplines seeking to solve technical problems of knowledge and technological know-how, disciplines splitting, again and again, into ever more specialized subordinate disciplines. But academia today, dominated as it is by knowledge-inquiry, violates rules (1), (2) and (4). Knowledge-inquiry excludes the tasks of (1) articulating problems of living, and (2) proposing and critically assessing possible solutions, possible *actions*, from the intellectual domain of inquiry altogether, just because these tasks are not germane to the acquisition of *knowledge*. In so far as these tasks do go on in academia today, they go on at the fringes, in departments concerned with policy, development, peace, and the environment: they are not the central, fundamental intellectual tasks of academia. And because (1) and (2) are violated, (4) inevitably is violated as well.<sup>7</sup>

As I have said, *three* of the four most elementary, fundamental rules of rational problem-solving that one can think of are violated by academia today in a wholesale, structural fashion.

This long-standing, gross, structural irrationality has had immensely damaging consequences. The long-standing and immensely successful pursuit of knowledge and technological know-how *dissociated from a more fundamental concern to tackle problems of living*—as a result of the failure to put (1) and (2) into practice—has meant, as we have seen, that industry, agriculture, populations and the military have developed in ways which have led to the creation of the ten global problems with which we began. As a result of failing to put (1) and (2) into practice, academia has failed to help humanity recognize and understand what our impending global problems are, and what we need to do

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<sup>6</sup> It may be objected that knowledge must first be acquired before rational action, even action, become possible. For my refutation of this objection, see *Knowledge to Wisdom*, ch. 8, reply to objection 6. In order to act rationally, we need to be able to act in the world, imagine and critically assess possible actions, and acquire relevant knowledge; but we cannot *begin* with the acquisition of knowledge because, unless we have some preliminary idea as to what our problem is and what we might do about it, we cannot know what knowledge it is *relevant* for us to acquire. Furthermore, I argue in some detail, there is an important sense in which *knowing how*, the capacity to act, is more fundamental than *knowing that*. The latter depends on the former. In ch. 8, eight other objections to the basic “from knowledge to wisdom” thesis are rebutted.

<sup>7</sup> For data and arguments that show, in detail, the extent to which academia puts knowledge-inquiry into practice and, as a result, marginalizes discussion of problems of living, see *From Knowledge to Wisdom*, ch. 6, especially 2nd ed.

about them. Furthermore, the failure to put (4) into practice as well as (1) and (2) has meant that the pursuit of knowledge and technological know-how has not been guided by a good understanding of what our problems of living are, and what actions we need to take to solve them. Priorities of scientific and technological research have been guided, not by an enlightened understanding of our most urgent human needs, especially the needs of the poor of the world, but by the needs of the wealthy and the powerful: first world populations, governments, industry, and the military. We have failed to develop the technology and the industry we so urgently need to deal with the impending, intensifying problems of climate change. Medical research is massively biased towards treating diseases of the world's wealthy, not the world's poor. The proportion of funds devoted to military research in the developed world is especially disturbing.<sup>8</sup> The UK spends something like 30% of its budget for research and development on the military. In the USA it is over 50%. It is not obvious that such research priorities are in the best interests of humanity—but rare indeed is it for this issue to be discussed in the public domain.<sup>9</sup>

The immense intellectual success of scientific and technological research, as a result of being pursued within the damagingly irrational framework of knowledge-inquiry, has led to a massive increase in our *power to act* (for some of us at least) without at the same time increasing our power to act *wisely*. The menace of science without wisdom is the key global crisis of our times, the one behind all the others.

What kind of academic inquiry do we need to help us tackle our problems of living, including our global problems, in a way that is genuinely effective, intelligent and humane? The answer: wisdom-inquiry. This is what results when knowledge-inquiry is modified just sufficiently to ensure that all four rules of rational problem-solving are put into practice. Wisdom-inquiry has, as its central and fundamental intellectual task, to articulate problems of living—individual, social and global—and propose and critically assess possible solutions, possible actions, policies, political programs, institutional changes, philosophies of life. This is the task of wisdom social inquiry and the humanities, at the heart of the academic enterprise, intellectually more fundamental than natural and technological science. The pursuit of knowledge of both natural and social phenomena would emerge out of, and feed back into, the intellectually fundamental activity of tackling problems of living (although the pursuit of knowledge should not, of course, be restricted to what we judge to be relevant to current problems of living, and knowledge and understanding can be of value in their own right).

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<sup>8</sup> For a more detailed discussion of the bad consequences of pursuing knowledge-inquiry, see *From Knowledge to Wisdom*, ch. 3.

<sup>9</sup> But see D. Smith, D., *The Atlas of War and Peace*, Earthscan, London, 2003; C. Langley, *Soldiers in the Laboratory*, Scientists for Global Responsibility, Folkstone, 2005.

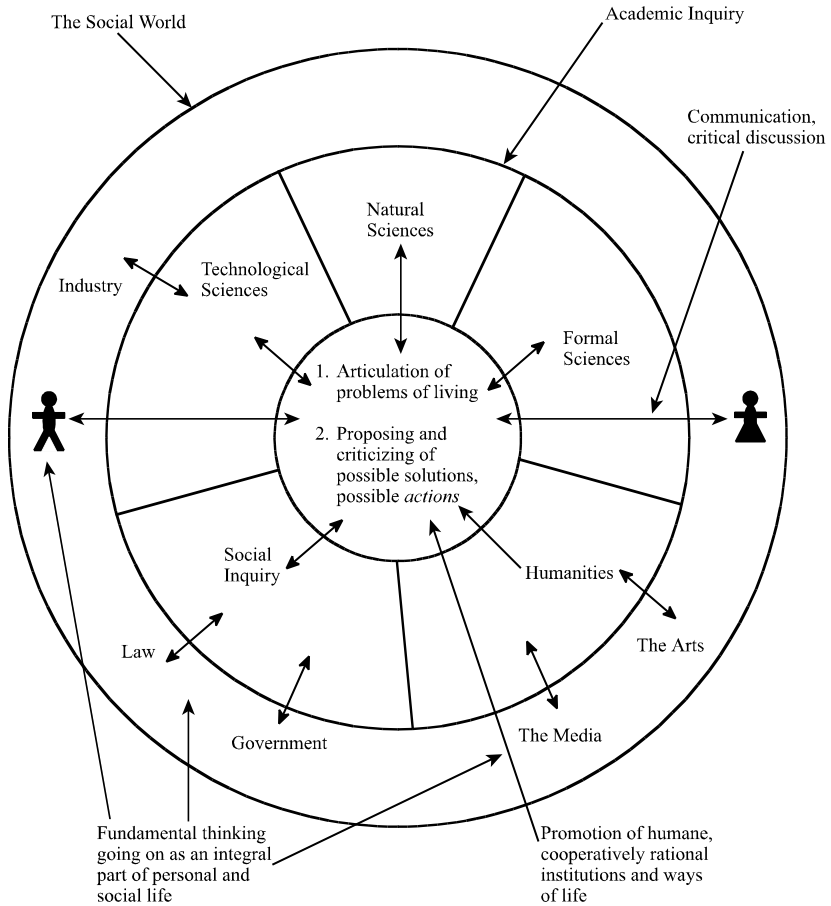


Diagram 1: Wisdom-Inquiry Implementing Problem-Solving Rationality

What really matters, of course, is the thinking we engage in as we live, at the individual, social and global level, guiding our actions. It is this socially active thinking we need to improve. The whole point of academic thought, from the perspective of wisdom-inquiry, is to help improve humanity's socially active thinking guiding action. Academic problem-solving is a specialized bit of human problem-solving quite generally; there thus needs to be a two-way interaction between the two, in accordance with rule (4). The proper basic task of universities is public education about what our problems are, and what we need to do about them, by means of discussion and debate. Universities need to become somewhat like a people's civil services, doing openly for the public what actual civil services are supposed to do, in secret, for governments. Academia would



have just sufficient power to be independent of government, industry, the military, the media and the public, but no more.<sup>10</sup>

This problem-solving version of wisdom-inquiry is depicted in diagram 1.

## SECOND ARGUMENT: AIM-ORIENTED RATIONALITY

It may be asked: If academia today really does suffer from the massive, damaging, structural irrationality I have argued for, when and how did this come about? The answer is that it all goes back to the 18th century Enlightenment. The *philosophes* of the French Enlightenment, in particular—Voltaire, Diderot, Condorcet and the rest—had the magnificent idea that it might be possible to learn from scientific progress how to achieve social progress towards an enlightened world. This, I claim, is the key idea of the French Enlightenment. The *philosophes* did all they could to get this profoundly important idea generally accepted, adopted and implemented.<sup>11</sup>

In developing and implementing the idea it is, however, essential to get the following three steps right.

1. The progress-achieving methods of science need to be correctly identified.
2. These methods need to be correctly generalized so that they become fruitfully applicable to any human endeavor, whatever the aims may be, and not just applicable to the endeavor of improving knowledge.
3. The correctly generalized progress-achieving methods then need to be exploited correctly in the great human endeavor of trying to make social progress towards an enlightened, wise, civilized world.

The *philosophes*, unfortunately, got all three steps wrong. They botched the job. Instead of applying progress achieving-methods, correctly generalized from those of science, directly to *social life*, to the task of making progress towards an enlightened world, the *philosophes* made the monumental blunder of applying seriously defective conceptions of scientific method to *social science*, to the task of making progress towards, not a *better world*, but to better *knowledge* of social phenomena. Impressed by Francis Bacon's point that, in order to better the lot of humanity it is essential to improve our knowledge of nature, the *philosophes* thought, understandably enough perhaps, that it is just as, or even more, important to improve knowledge of the human world itself. First knowledge is to be acquired; then it can be applied to help promote human welfare. So they set about founding and developing the social sciences: economics, sociology, psychology, anthropology, and the rest. And this ancient blunder,

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<sup>10</sup> For a more detailed exposition of problem-solving wisdom-inquiry, see *From Knowledge to Wisdom*, ch. 4. See also my *Is Science Neurotic?*, Imperial College Press, London, 2004, ch. 3.

<sup>11</sup> The best account of the Enlightenment known to me is still: P. Gay, *The Enlightenment: An Interpretation*, Wildwood House, London, 1973.

developed throughout the 19th century by J.S. Mill, Karl Marx and many others, and built into academia in the early 20th century with the creation of the diverse branches of the social sciences in universities all over the world, is still built into the institutional and intellectual structure of academia today, inherent in the current character of much social science. The outcome is what we still have today: knowledge-inquiry, the botched version of the Enlightenment idea.<sup>12</sup>

Knowledge-inquiry, in short, is the outcome of applying progress-achieving methods, generalized from those of science, to *social science*, to the task of improving *knowledge* of social life, instead of applying these methods directly to *social life*, to the task of making social progress towards an enlightened world.

I now consider in a little more detail what these blunders are that we have inherited from the Enlightenment, and how they are to be put right, taking the above three steps in turn. This constitutes my second argument for wisdom-inquiry. The outcome is an improved version of wisdom-inquiry, especially relevant when aims are problematic, which adds to and refines the above problem-solving conception.

To begin with, the *philosophes* failed to capture correctly the progress-achieving methods of natural science. From D'Alembert in the 18th century to Karl Popper in the 20th, the widely held view, amongst both scientists and philosophers, has been (and continues to be) that science proceeds by assessing theories impartially in the light of evidence, *no permanent assumption being accepted by science about the universe independently of evidence*. Preference may be given to simple, unified or explanatory theories, but not in such a way that nature herself is, in effect, assumed to be simple, unified or comprehensible. This orthodox view, which I call *standard empiricism* is, however, untenable. If taken literally, it would bring science to a standstill. For, given any accepted fundamental theory of physics, T, Newtonian theory say, or quantum theory, endlessly many empirically more successful rivals can be concocted which agree with T about observed phenomena but disagree arbitrarily about some unobserved phenomena, and successfully predict phenomena, in an *ad hoc* way, that T makes false predictions about, or no predictions at all. Physics would be drowned in an ocean of such empirically more successful rival theories.

In practice, these rivals are excluded because they are disastrously disunified. *Two* considerations govern acceptance of theories in physics: empirical success and unity. In demanding unity, we demand of a fundamental physical theory that it ascribes *the same* dynamical laws to the phenomena to which the

<sup>12</sup> For accounts of the development of the social sciences along these lines – but not depicted as a blunder—see R. Aron, *Main Currents in Sociological Thought*, Penguin, Harmondsworth, vol. 1 1968; vol. 2, 1970; J. Farganis, ed., *Readings in Social Theory: The Classic Tradition to Post-Modernism*, McGraw-Hill, New York, 1993, Introduction.

theory applies.<sup>13</sup> But in persistently accepting unified theories, to the extent of rejecting disunified rivals that are just as, or even more, empirically successful, physics makes a big persistent assumption about the universe. The universe is such that all disunified theories are false. It has some kind of unified dynamic structure. It is physically comprehensible in the sense that explanations for phenomena exist to be discovered.

But this untestable (and thus metaphysical) assumption that the universe is physically comprehensible is profoundly problematic. Science is obliged to assume, but does not know, that the universe is comprehensible. Much less does it know that the universe is comprehensible in this or that way. A glance at the history of physics reveals that ideas have changed dramatically over time. In the 17<sup>th</sup> century there was the idea that the universe consists of corpuscles, minute billiard balls, which interact only by contact. This gave way to the idea that the universe consists of point-particles surrounded by rigid, spherically symmetrical fields of force, which in turn gave way to the idea that there is one unified self-interacting field, varying smoothly throughout space and time. Nowadays we have the idea that everything is made up of minute quantum strings embedded in ten or eleven dimensions of space-time. Some kind of assumption along these lines must be made but, given the historical record, and given that any such assumption concerns the ultimate nature of the universe, that of which we are most ignorant, it is only reasonable to conclude that it is almost bound to be false.

The way to overcome this fundamental dilemma inherent in the scientific enterprise is to construe physics as making a hierarchy of metaphysical assumptions concerning the comprehensibility and knowability of the universe, these assumptions asserting less and less as one goes up the hierarchy, and thus becoming more and more likely to be true, and more nearly such that their truth is required for science, or the pursuit of knowledge, to be possible at all: see diagram 2. In this way, a framework of relatively insubstantial, unproblematic, fixed assumptions and associated methods is created within which much more substantial and problematic assumptions and associated methods can be changed, and indeed improved, as scientific knowledge improves. Those assumptions, low down in the hierarchy, are adopted which (a) accord best with assumptions higher up in the hierarchy, and (b) best accord with the most empirically progressive research programme, or hold out the best promise of leading to such a research programme. Put another way, a framework of relatively unspecific, unproblematic, fixed *aims* and methods is created within which much more specific and problematic aims and methods evolve as scientific knowledge evolves. There is positive feedback between improving knowledge, and improving aims-and-methods, improving knowledge-about-how-to-

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<sup>13</sup> For the solution to the problem of what it means to say of a physical theory that it is “unified” or “explanatory,” along these lines, see works referred to in note 27.

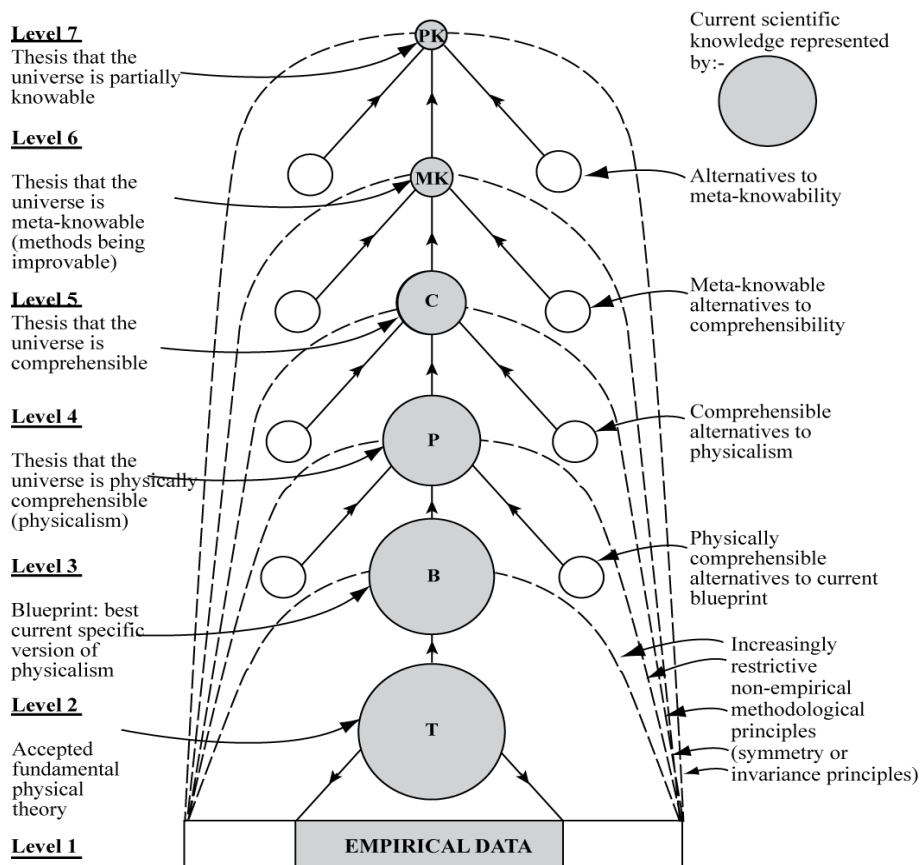


Diagram 2: The Progress-Achieving Methods of Science of Aim-Oriented Empiricism

improve-knowledge. This is the nub of scientific rationality, the methodological key to the unprecedented success of science. Science adapts its nature to what it discovers about the nature of the universe.<sup>14</sup>

<sup>14</sup> It deserves to be noted that everyone recognizes that this kind of positive feedback between improving knowledge, and improving knowledge-about-how-to-improve-knowledge, goes on all the time at the *empirical* level. As we acquire new knowledge, we develop new empirical methods, new observational or experimental tools, such as microscopes, telescopes, radio telescopes, electron microscopes, Wilson cloud chambers, particle accelerators, and all the other tools of modern science, which in turn lead to a massive increase in knowledge. Widespread acceptance of standard empiricism has obstructed recognition of the point that a similar positive feedback process goes on at the theoretical level. Improving theoretical knowledge leads to improving level 3 assumptions, in diagram 2, which in turn leads to improving level 3 methods—new symmetry principles, such as Lorentz invariance, or gauge invariance, which in turn lead to new level 2, theoretical knowledge.

This hierarchical conception of physics, which I call *aim-oriented empiricism*, can readily be generalized to take into account problematic assumptions associated with the aims of science having to do with *values*, and the *social uses* or *applications* of science. It can be generalized so as to apply to the different branches of natural science. Different sciences have different specific aims, and so different specific methods although, throughout natural science there is the common meta-methodology of aim-oriented empiricism.<sup>15</sup>

Science has, in practice, put something like aim-oriented empiricism into practice: if it had not, we would still be stuck with pre-Galilean, Aristotelian science. However, that most scientists take for granted, and seek to implement, standard empiricism means that aim-oriented empiricism is put into scientific practice in only a somewhat furtive, abortive manner, and this has a range of bad consequences for science itself.<sup>16</sup>

So much for the first blunder of the traditional Enlightenment, and how to put it right.<sup>17</sup>

Second, having failed to identify the methods of science correctly, the *philosophes* naturally failed to generalize these methods properly. They failed to appreciate that the idea of representing the problematic aims (and associated methods) of science in the form of a hierarchy can be generalized and applied fruitfully to other worthwhile enterprises besides science. Many other enterprises have problematic aims—problematic because aims conflict, and because what we seek may be unrealizable, undesirable, or *both*. Such enterprises, with problematic aims, would benefit from employing a hierarchical methodology, generalized from that of science, thus making it possible to improve aims and methods as the enterprise proceeds. There is the hope that, as a result of exploiting in life methods generalized from those employed with such success in science, some of the astonishing success of science might be exported into other worthwhile human endeavours, with problematic aims quite different from those of science. The *philosophes* failed, in short, to generalize aim-oriented empiricism, the progress-achieving methods of science, to form a new aim-pursuing conception of rationality—*aim-oriented rationality* as it may be called—which emphasizes the need to represent basic aims, when problematic, in the form of a hierarchy of aims (and associated methods), aims becoming less

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<sup>15</sup> For a more detailed discussion of this point, see my *Is Science Neurotic?*, Imperial College Press, London, 2004, pp. 41–47.

<sup>16</sup> See *Is Science Neurotic?*, ch. 2; and my *Do We Need a Scientific Revolution?*, *Journal for Biological Physics and Chemistry*, vol. 8, no. 3, September 2008, pp. 95–105.

<sup>17</sup> For further details see my *The Comprehensibility of the Universe: A New Conception of Science*, Oxford University Press, 1998; *Is Science Neurotic?*; and ref. 1, especially chs. 5, 9, and 2nd ed., ch. 14. See also my Popper, Kuhn, Lakatos and Aim-Oriented Empiricism, *Philosophia* 32, nos. 1–4, 2004, pp. 181–239; and “A Priori Conjectural Knowledge in Physics,” in *What Place for the A Priori?*, ed. M. Shaffer and M. Veber, Open Court, Chicago, 2011, pp. 211–240. These two papers, like my other papers, are available online at: <http://philpapers.org/profile/17092>.

and less specific as one goes up the hierarchy, and thus less and less problematic. In this way (as in aim-oriented empiricist science), a framework of relatively unproblematic, uncontroversial aims and methods is created within which much more specific, problematic and controversial aims (and associated methods) may be cooperatively improved, in the light of agreed, unproblematic aims and ideals, and in the light of what we experience, what we enjoy and suffer, as a result of what we *do* in pursuit of our specific aims.

Third, and most disastrously of all, the *philosophes* failed completely to try to apply aim-oriented rationality (generalized from the aim-oriented empiricist methods of science) to the immense, and profoundly problematic enterprise of making social progress towards an enlightened, wise world. The aim of such an enterprise is notoriously problematic. For all sorts of reasons, what constitutes a good world, an enlightened, wise or civilized world, attainable and genuinely desirable, must be inherently and permanently problematic.<sup>18</sup> Here, above all, it is essential to employ the generalized version of the hierarchical, progress-achieving methods of science, designed specifically to facilitate progress when basic aims are problematic: see diagram 3. It is just this that the *philosophes* failed to do. As I have in effect already remarked, instead of applying aim-oriented rationality to *social life*, the *philosophes* sought to apply a seriously defective conception of scientific method to *social science*, to the task of making progress towards, not a *better world*, but to better *knowledge* of social phenomena.<sup>19</sup>

The outcome of these three blunders of the Enlightenment is academic inquiry as it mostly exists today. Knowledge-inquiry is, in short, the product of a botched attempt to create a kind of inquiry rationally designed to help us create an enlightened world. Two centuries later, the time is long overdue for us to put

<sup>18</sup> There are a number of reasons why the aim of creating a genuinely civilized world is inherently problematic. People have very different ideas as to what does constitute civilization. Most views about what constitutes Utopia, an ideally civilized society, have been unrealizable and profoundly undesirable. People's interests, values and ideals clash. Even values that, one may hold, ought to be a part of civilization may clash. Thus freedom and equality, even though inter-related, may nevertheless clash. It would be an odd notion of individual freedom which held that freedom was for some, and not for others; and yet if equality is pursued too single-mindedly this will undermine individual freedom, and will even undermine equality, in that a privileged class will be required to enforce equality on the rest, as in the old Soviet Union. A basic aim of legislation for civilization, we may well hold, ought to be increase freedom by restricting it: this brings out the inherently problematic, paradoxical character of the aim of achieving civilization. One thinker who has stressed the inherently problematic, contradictory character of the idea of civilization is Isaiah Berlin; see, for example, his Berlin, I., 1980, *Against the Current*, Hogarth Press, London, 1980, pp. 74–79. Berlin thought the problem could not be solved; I, on the contrary, hold that the hierarchical methodology indicated here provides us with the means to learn how to improve our solution to it in real life.

<sup>19</sup> For a more detailed exposition of aim-oriented rationality, and of the conception of wisdom-inquiry based on it, see *From Knowledge to Wisdom*, ch. 5 and 8; *Is Science Neurotic?*, chs. 3 and 4.

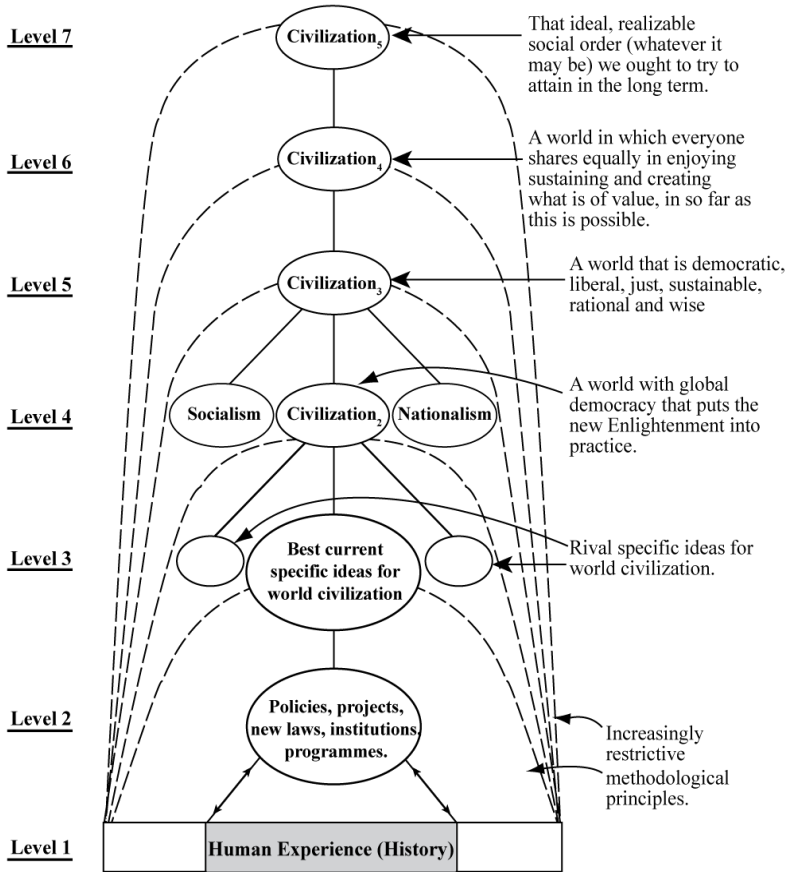


Diagram 3: Aim-Oriented Rationality Applied to the Task of Making Progress Towards an Enlightened, Wise, Civilized World

right in our crucial institutions of learning the defects we have inherited from the past.

Properly implemented, then, the Enlightenment idea of learning from scientific progress how to achieve social progress towards an enlightened world would involve developing social inquiry, not primarily as social *science*, but rather as social *methodology*, or social *philosophy*. A basic task would be to get into personal and social life, and into other institutions besides that of science—into government, industry, agriculture, commerce, the media, law, education, international relations—hierarchical, progress-achieving methods (designed to improve problematic aims) arrived at by generalizing the methods of science. A basic task for academic inquiry as a whole would be to help humanity learn how

to resolve its conflicts and problems of living in more just, cooperatively rational ways than at present. This task would be intellectually more fundamental than the scientific task of acquiring knowledge. Social inquiry would be intellectually more fundamental than physics. The fundamental intellectual and humanitarian aim of inquiry would be to help humanity acquire wisdom—wisdom being the capacity to realize (apprehend and create) what is of value in life, for oneself and others, wisdom thus including knowledge and technological know-how but much else besides.

One outcome of getting aim-oriented rationality into social and institutional life is that it becomes possible for us to develop and assess rival philosophies of life as a part of social life, somewhat as theories are developed and assessed within science. Such a hierarchical methodology provides a framework within which competing views about what our aims and methods in life should be—competing religious, political and moral views—may be cooperatively assessed and tested against broadly agreed, unspecific aims (high up in the hierarchy of aims) and the experience of personal and social life. There is the possibility of cooperatively and progressively improving *such philosophies of life* (views about what is of value in life and how it is to be achieved) much as *theories* are cooperatively and progressively improved in science. In science, ideally, theories are critically assessed with respect to each other, with respect to metaphysical ideas concerning the comprehensibility of the universe, and with respect to *experience* (observational and experimental results). In a somewhat analogous way, diverse philosophies of life may be critically assessed with respect to each other, with respect to relatively uncontroversial, agreed ideas about aims and what is of value, and with respect to *experience*—what we do, achieve, fail to achieve, enjoy and suffer—the aim being to improve philosophies of life (and more specific philosophies of more specific enterprises within life such as government, education or art) so that they offer greater help with the realization of what is of value in life. This hierarchical methodology is especially relevant to the task of resolving conflicts about aims and ideals, as it helps disentangle agreement (high up in the hierarchy) and disagreement (more likely to be low down in the hierarchy).

Wisdom-inquiry, because of its greater rigour, has intellectual standards that are, in important respects, different from those of knowledge-inquiry. Whereas knowledge-inquiry demands that emotions and desires, values, human ideals and aspirations, philosophies of life be excluded from the intellectual domain of inquiry, wisdom-inquiry requires that they be included. In order to discover what is of value in life it is essential that we attend to our feelings and desires. But not everything we desire is desirable, and not everything that feels good is good. Feelings, desires and values need to be subjected to critical scrutiny. And of course feelings, desires and values must not be permitted to influence judgements of factual truth and falsity.

Wisdom-inquiry embodies a synthesis of traditional Rationalism and Romanticism. It includes elements from both, and it improves on both. It incorpo-



rates Romantic ideals of integrity, having to do with motivational and emotional honesty, honesty about desires and aims; and at the same time it incorporates traditional Rationalist ideals of integrity, having to do with respect for objective fact, knowledge, and valid argument. Traditional Rationalism takes its inspiration from science and method; Romanticism takes its inspiration from art, from imagination, and from passion. Wisdom-inquiry holds art to have a fundamental rational role in inquiry, in revealing what is of value, and unmasking false values; but science, too, is of fundamental importance. What we need, for wisdom, is an interplay of sceptical rationality and emotion, an interplay of mind and heart, so that we may develop mindful hearts and heartfelt minds (as I put it in my first book *What's Wrong With Science?*). It is time we healed the great rift in our culture, so graphically depicted by C. P. Snow.<sup>20</sup>

All in all, if the Enlightenment revolution had been carried through properly, the three steps indicated above being correctly implemented, the outcome would have been a kind of academic inquiry very different from what we have at present, inquiry devoted primarily to the intellectual aim of acquiring knowledge.<sup>21</sup>

It deserves to be noted that all our current global problems have come about because of our failure to build something like aim-oriented rationality into our social world, into industry, agriculture, politics, commerce, finance, the media, the military, the law, international relations. Climate change, rapid population growth, destruction of natural habitats and extinction of species, the credit crunch, the spread of armaments, conventional and nuclear: all these global problems are the outcome of our successful pursuit of highly problematic aims that have not been subjected to the sustained, effective imaginative and critical examination that aim-oriented rationality would require. Not only have we failed to put aim-oriented rationality into practice, to our great cost. We have failed even to see the need to do this. Even worse, the very idea of aim-oriented rationality is, as yet, largely unknown.

### INQUIRY PURSUED FOR ITS OWN SAKE

From what has been said so far, it might seem that wisdom-inquiry may do better justice to the practical aspects of inquiry, but downplays what knowledge-inquiry emphasizes, the great value of inquiry pursued for its own sake—pure as opposed to applied research. Actually, it is all the other way round. Wisdom-inquiry does better justice to *both* aspects of inquiry, pure and applied, inquiry pursued for its own sake, and inquiry pursued for the sake of social or humanitarian goals.

From the standpoint of inquiry pursued for its own sake, the intellectual or cultural aspect of inquiry, what really matters is the desire that people have to

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<sup>20</sup> C. P. Snow, *The Two Cultures: And a Second Look*, Cambridge University Press, 1986.

<sup>21</sup> See *From Knowledge to Wisdom* and *Is Science Neurotic?*.

see, to know, to understand, the passionate curiosity that individuals have about aspects of the world, and the knowledge and understanding that people acquire and share as a result of actively following up their curiosity. An important task for academic thought in universities is to encourage non-professional thought to flourish outside universities. As Einstein once remarked

“Knowledge exists in two forms—lifeless, stored in books, and alive in the consciousness of men. The second form of existence is after all the essential one; the first, indispensable as it may be, occupies only an inferior position.”<sup>22</sup>

Wisdom-inquiry is designed to promote all this in a number of ways. It does so as a result of holding thought, at its most fundamental, to be the personal thinking we engage in as we live. It does so by recognizing that acquiring knowledge and understanding involves articulating and solving personal problems that one encounters in seeking to know and understand. It does so by recognizing that passion, emotion and desire, have a rational role to play in inquiry, disinterested research being a myth. Again, as Einstein has put it

“The most beautiful experience we can have is the mysterious. It is the fundamental emotion which stands at the cradle of true art and true science. Whoever does not know it and can no longer wonder, no longer marvel, is as good as dead, and his eyes are dimmed.”<sup>23</sup>

Knowledge-inquiry, by contrast, all too often fails to nourish “the holy curiosity of inquiry,”<sup>24</sup> and may even crush it out altogether. Knowledge-inquiry gives no rational role to emotion and desire; passionate curiosity, a sense of mystery, of wonder, have no place, officially, within the rational pursuit of knowledge. The intellectual domain becomes impersonal and split off from personal feelings and desires; it is difficult for “holy curiosity” to flourish in such circumstances. Knowledge-inquiry hardly encourages the view that inquiry at its most fundamental is the thinking that goes on as a part of life; on the contrary, it upholds the idea that fundamental research is highly esoteric, conducted by physicists in contexts remote from ordinary life. Even though the aim of inquiry may, officially, be *human* knowledge, the personal and social dimension of this is all too easily lost sight of, and progress in knowledge is conceived of in impersonal terms, stored lifelessly in books and journals. Rare is it for popular books on science to take seriously the task of exploring the fundamental problems of a science in as accessible, non-technical and intellectually respon-

<sup>22</sup> A. Einstein, *Ideas and Opinions*, Souvenir Press, London, 1973, p. 80.

<sup>23</sup> *Ideas and Opinions*, p. 11.

<sup>24</sup> A. Einstein, *Autobiographical Notes*, in P. A. Schilpp, ed., *Albert Einstein: Philosopher-Scientist*, Open Court, Illinois, 1949, p. 17.

sible a way as possible.<sup>25</sup> Such work is not highly regarded by knowledge-inquiry, as it does not contribute to “expert knowledge.” The failure of knowledge-inquiry to take seriously the highly problematic nature of the aims of inquiry leads to insensitivity as to what aims are being pursued, to a kind of institutional hypocrisy. Officially, knowledge is being sought “for its own sake,” but actually the goal may be immortality, fame, the flourishing of one’s career or research group, as the existence of bitter priority disputes in science indicates. Education suffers. Science students are taught a mass of established scientific knowledge, but may not be informed of the *problems* which gave rise to this knowledge, the problems which scientists grappled with in creating the knowledge. Even more rarely are students encouraged themselves to grapple with such problems. And rare, too, is it for students to be encouraged to articulate their own problems of understanding that must, inevitably arise in absorbing all this information, or to articulate their instinctive criticisms of the received body of knowledge. All this tends to reduce education to a kind of intellectual indoctrination, and serves to kill “holy curiosity.” Officially, courses in universities divide up into those that are vocational, like engineering, medicine and law, and those that are purely educational, like physics, philosophy or history. What is not noticed, again through insensitivity to problematic aims, is that the supposedly purely educational are actually vocational as well: the student is being trained to be an academic physicist, philosopher or historian, even though only a minute percentage of the students will go on to become academics. Real education, which must be open-ended, and without any pre-determined goal, rarely exists in universities, and yet few notice.<sup>26</sup>

Aim-oriented empiricism (key component of wisdom-inquiry) does better justice to the search for understanding in physics than does standard empiricism (key component of knowledge-inquiry), in stressing that a physical theory, in order to be acceptable, must be unified or explanatory, and in solving the problem of what it means to assert of a physical theory that it is unified or explanatory.<sup>27</sup> Orthodox quantum theory (OQT) is, as I have argued for many years, a severely non-explanatory, disunified theory because it fails to solve the fundamental wave/particle problem and must, as a result, rely on some part of classical physics for a treatment of measurement.<sup>28</sup> For many decades, OQT was

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<sup>25</sup> A fairly recent, remarkable exception is R. Penrose, *The Road to Reality*, Jonathan Cape, London, 2004.

<sup>26</sup> These considerations are developed further in my *What’s Wrong With Science?, From Knowledge to Wisdom, Is Science Neurotic?*, and “Popper’s Paradoxical Pursuit of Natural Philosophy.”

<sup>27</sup> See *The Comprehensibility of the Universe*, ch. 4; *Is Science Neurotic?*, pp. 160–174; *From Knowledge to Wisdom*, 2nd ed., pp. 373–386.

<sup>28</sup> See my *A New Look at the Quantum Mechanical Problem of Measurement*, *American Journal of Physics* 40, 1972, pp. 1431–5; *Towards a Micro Realistic Version of Quantum Mechanics*, *Foundations of Physics* 6, 1976, pp. 275–92 and 661–76; *Instead of Particles and Fields: A Micro Realistic Quantum “Smearon” Theory*, *Foundations of Physics* 12, 1982, pp. 607–31; *Quantum*

nevertheless accepted by almost all physicists, because of its great empirical success. General acceptance of standard empiricism played a major role in this long-standing acceptance of OQT. For standard empiricism emphasizes the importance of empirical success, and leaves the meaning of unity or explanatory character obscure. Viewed from the perspective of aim-oriented empiricism, however, it is obvious that OQT is highly problematic because, though immensely successful empirically, it is nevertheless severely disunified, being made up of clashing quantum and classical postulates, arbitrarily stuck together. Furthermore, whereas aim-oriented empiricism encourages the kind of thinking that may be required to solve the key wave/particle problem, standard empiricism discourages such thinking, and denies there is a problem in the first place. In short, general acceptance of standard empiricism may have delayed the development of an acceptable version of quantum theory, and so our understanding of the quantum domain, for many decades. I might add that it is no accident that Einstein, who saw clearly that OQT fails to provide us with understanding of the quantum domain, also held a view close to aim-oriented empiricism.<sup>29</sup>

It is not just in natural science that wisdom-inquiry does better justice to the search for understanding than knowledge-inquiry. This is true of social inquiry as well.

In order to enhance our understanding of persons as beings of value, potentially and actually, we need to understand them empathetically, by putting ourselves imaginatively into their shoes, and experiencing, in imagination, what they feel, think, desire, fear, plan, see, love and hate. For wisdom-inquiry, this kind of empathic understanding is rational and intellectually fundamental. Articulating problems of living, and proposing and assessing possible solutions is, we have seen, the fundamental intellectual activity of wisdom-inquiry. But it is just this that we need to do to acquire empathic understanding. Social inquiry, in tackling problems of living, is also promoting empathic understanding of people. Empathic understanding is essential to wisdom. Elsewhere I have argued, indeed, that empathic understanding plays an essential role in the evolution of consciousness. It is required for cooperative action, and even for science.<sup>30</sup>

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*Propensiton Theory: A Testable Resolution of the Wave/Particle Dilemma*, British Journal for the Philosophy of Science 39, 1988, pp. 1–50; *Particle Creation as the Quantum Condition for Probabilistic Events to Occur*, Physics Letters A 187, 1994, pp. 351–5; *Does Probabilism Solve the Great Quantum Mystery?*, Theoria vol. 19/3, no. 51, 2004, pp. 321–336; *Is the Quantum World Composed of Propensitons?*, in: *Probabilities, Causes and Propensities in Physics*, edited by Mauricio Suárez, Synthese Library, Springer, Dordrecht, 2011, pp. 219–241. Available online at: <http://philpapers.org/profile/17092> .

<sup>29</sup> See my *Induction and Scientific Realism: Einstein versus van Fraassen. Part Three: Einstein, Aim-Oriented Empiricism and the Discovery of Special and General Relativity*, British Journal for the Philosophy of Science 44, 1993, pp. 275–305.

<sup>30</sup> For a fuller exposition of such an account of empathic understanding see my *From Knowledge to Wisdom*, 1st ed., pp. 171–189; 2nd ed., pp. 194–213; and chapter 10; and *The Human World in the Physical Universe*, Rowman and Littlefield, Lanham, Maryland, 2001, chs. 5–7 and 9.

Granted knowledge-inquiry, on the other hand, empathic understanding hardly satisfies basic requirements for being an intellectually legitimate kind of explanation and understanding.<sup>31</sup> It has the status merely of “folk psychology,” on a par with “folk physics.”

### WHAT NEEDS TO CHANGE

The above two arguments establish that the following 15 intellectual/institutional changes need to be made if knowledge-inquiry is to become wisdom-inquiry.

1. There needs to be a change in the basic intellectual *aim* of inquiry, from the growth of knowledge to the growth of wisdom—wisdom being taken to be the capacity to realize what is of value in life, for oneself and others, and thus including knowledge, understanding and technological know-how. (Whereas knowledge-inquiry sharply distinguishes the intellectual and social aims of academia, wisdom-inquiry holds them to be one and the same: wisdom.)

2. There needs to be a change in the nature of academic *problems*, so that problems of living are included, as well as problems of knowledge. Furthermore, problems of living need to be treated as intellectually more fundamental than problems of knowledge.

3. There needs to be a change in the nature of academic *ideas*, so that proposals for action are included as well as claims to knowledge. Furthermore, proposals for action need to be treated as intellectually more fundamental than claims to knowledge.

4. There needs to be a change in what constitutes intellectual *progress*, so that progress-in-ideas-relevant-to-achieving-a-more-civilized-world is included as well as progress in knowledge, the former being indeed intellectually fundamental.

5. There needs to be a change in the idea as to where inquiry, at its most fundamental, is located. It is not esoteric theoretical physics, but rather the thinking we engage in as we seek to achieve what is of value in life.

6. There needs to be a dramatic change in the nature of social inquiry (reflecting points 1 to 5). Economics, politics, sociology, and so on, are not, fundamentally, *sciences*, and do not, fundamentally, have the task of improving knowledge about social phenomena. Instead, their task is threefold. First, it is to articulate problems of living, and propose and critically assess possible solutions, possible actions or policies, from the standpoint of their capacity, if implemented, to promote wiser ways of living. Second, it is to promote such cooperatively rational tackling of problems of living throughout the social world. And third, at a more basic and long-term level, it is to help build the hierarchical structure of aims and methods of aim-pursuing rationality into personal, institu-

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<sup>31</sup> See *From Knowledge to Wisdom*, 1st ed., pp. 183–185; 2nd ed., pp. 206–208.

tional and global life, thus creating frameworks within which progressive improvement of personal and social life aims-and-methods becomes possible. These three tasks are undertaken in order to promote cooperative tackling of problems of living—but also in order to enhance empathic or “personalistic” understanding between people as something of value in its own right.<sup>32</sup> Acquiring knowledge of social phenomena is a subordinate activity, engaged in to facilitate the above three fundamental pursuits.

7. Natural science needs to change, so that it includes at least three levels of discussion: evidence, theory, and research aims. Discussion of aims needs to bring together scientific, metaphysical and evaluative consideration in an attempt to discover the most desirable and realizable research aims. It needs to influence, and be influenced by, exploration of problems of living undertaken by social inquiry and the humanities, and the public.

8. There needs to be a dramatic change in the relationship between social inquiry and natural science, so that social inquiry becomes intellectually more fundamental from the standpoint of tackling problems of living, promoting wisdom.

9. The way in which academic inquiry as a whole is related to the rest of the human world needs to change dramatically. Instead of being intellectually dissociated from the rest of society, academic inquiry needs to be communicating with, learning from, teaching and arguing with the rest of society—in such a way as to promote cooperative rationality and social wisdom. Academia needs to have just sufficient power to retain its independence from the pressures of government, industry, the military, and public opinion, but no more.

10. There needs to be a change in the role that political and religious ideas, works of art, expressions of feelings, desires and values have within rational inquiry. Instead of being excluded, they need to be explicitly included and critically assessed, as possible indications and revelations of what is of value, and as unmasking of fraudulent values in satire and parody, vital ingredients of wisdom.

11. There need to be changes in education so that, for example, seminars devoted to the cooperative, imaginative and critical discussion of problems of living are at the heart of all education from five-year-olds onwards.<sup>33</sup> Politics, which cannot be taught by knowledge-inquiry, becomes central to wisdom-inquiry, political creeds and actions being subjected to imaginative and critical scrutiny.

12. There need to be changes in the aims, priorities and character of pure science and scholarship, so that it is the curiosity, the seeing and searching, the knowing and understanding of individual persons that ultimately matters, the

<sup>32</sup> See note 30.

<sup>33</sup> For wisdom-inquiry for five-year olds, see my *Philosophy Seminars for Five-Year-Olds*, *Learning for Democracy*, vol. 1, no. 2, 2005, pp. 71–77 (reprinted in *Gifted Education International*, vol. 22, no. 2/3, 2007, pp. 122–7).

more impersonal, esoteric, purely intellectual aspects of science and scholarship being means to this end. Social inquiry needs to give intellectual priority to helping empathic understanding between people to flourish (as indicated in 6 above).

13. There need to be changes in the way mathematics is understood, pursued and taught. Mathematics is not a branch of knowledge at all. Rather, it is concerned to explore problematic *possibilities*, and to develop, systematize and unify problem-solving methods.<sup>34</sup>

14. Literature needs to be put close to the heart of rational inquiry, in that it explores imaginatively our most profound problems of living and aids personalistic understanding in life by enhancing our ability to enter imaginatively into the problems and lives of others.

15. Philosophy needs to change so that it ceases to be just another specialized discipline and becomes instead that aspect of inquiry as a whole that is concerned with our most general and fundamental problems—those problems that cut across all disciplinary boundaries. Philosophy needs to become again what it was for Socrates: the attempt to devote reason to the growth of wisdom in life.<sup>35</sup>

The following four institutional innovations ought also to be made to help wisdom-inquiry to flourish.

16. Natural science needs to create committees, in the public eye, and manned by scientists and non-scientists alike, concerned to highlight and discuss failures of the priorities of research to respond to the interests of those whose needs are the greatest—the poor of the earth—as a result of the inevitable tendency of research priorities to reflect the interests of those who pay for science, and the interests of scientists themselves.

17. Every university needs to create a seminar or symposium devoted to the sustained discussion of fundamental problems that cut across all conventional academic boundaries, global problems of living being included as well as problems of knowledge and understanding.

18. Every national university system needs to include a national shadow government, seeking to do, virtually, free of the constraints of power, what the actual national government ought to be doing. The hope would be that virtual and actual governments would learn from each other.

19. The world's universities need to include a virtual world government which seeks to do what an actual elected world government ought to do, if it

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<sup>34</sup> For a sketch of wisdom-inquiry mathematics see my *Wisdom Mathematics*, Friends of Wisdom Newsletter, no. 6, 2010, pp. 1–6; <http://www.knowledgetowisdom.org/Newsletter%206.pdf>

<sup>35</sup> See especially my *Science, Reason, Knowledge and Wisdom: A Critique of Specialism*, Inquiry 23, 1980, pp. 19–81; and “Reply to Comments on *Science and the Pursuit of Wisdom*,” *Philosophia*, vol. 38, Issue 4, 2010, pp. 667–690.

existed. The virtual world government would also have the task of working out how an actual democratically elected world government might be created.<sup>36</sup>

### RECENT STEPS TOWARDS WISDOM-INQUIRY

In recent years there have been a number of developments in universities that can be interpreted as first steps towards putting problem-solving wisdom-inquiry into practice. These developments include new institutions to tackle problems of global warming, the environment, global health and other policy issues such as peace, justice, democracy, development, medical ethics, and wellbeing, and a growing concern to promote public engagement with science.<sup>37</sup> New institutional structures have been created to bring together different specialized disciplines to tackle problems associated with global warming and other environmental issues, and to interact with politicians, industry, the media and the public. This has been done at Oxford and Cambridge Universities.<sup>38</sup> Somewhat similar institutions have been created that have links with many universities, for example the John Tyndall Centre for Climate Change,<sup>39</sup> and the UK Energy Research Centre.<sup>40</sup> My own university, University College London, has recently created “The Grand Challenges Programme” which brings together experts from diverse fields to work on global problems.<sup>41</sup> Influenced somewhat by my work, the Program has “A Wisdom Agenda;”<sup>42</sup> it has recently produced a policy document entitled “Developing a culture of wisdom at UCL.”<sup>43</sup>

But these changes, though immensely important, are nevertheless scattered, faltering, minimal, and lack a sense of the magnitude of what needs to be done. What we need, and at present singularly lack, is a high-profile campaign in support of bringing about sweeping changes to academia so that we may come to possess what we so urgently require: institutions of learning rationally devoted to helping us create a better, wiser world.

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<sup>36</sup> For further discussion of changes that would need to be made for universities to implement wisdom-inquiry, see *From Knowledge to Wisdom; Is Science Neurotic?*; and my *Cutting God in Half—And Putting the Pieces Together Again: A New Approach to Philosophy*, Pentire Press, London, 2010, especially ch. 9.

<sup>37</sup> For developments of this point, see M. Iredale, M. (2007) *From knowledge-inquiry to wisdom-inquiry: is the revolution underway?*, London Review of Education, 5, pp. 117–29 (reprinted in R. Barnett and N. Maxwell, eds., *Wisdom in the University*, Routledge, London, 2008, pp. 21–33); C. Macdonald, *Nicholas Maxwell in Context: The Relationship of His Wisdom Theses to the Contemporary Global Interest in Wisdom*, in L. McHenry, ed., *Science and the Pursuit of Wisdom: Studies in the Philosophy of Nicholas Maxwell*, Ontos Verlag, Frankfurt, 2009, pp. 61–81.

<sup>38</sup> See <http://www.geog.ox.ac.uk/>; and <http://www.cei.cam.ac.uk/>.

<sup>39</sup> See <http://www.tyndall.ac.uk/>.

<sup>40</sup> See [www.ukerc.ac.uk/](http://www.ukerc.ac.uk/).

<sup>41</sup> <http://www.ucl.ac.uk/research/grand-challenges>.

<sup>42</sup> <http://www.ucl.ac.uk/research/wisdom-agenda>.

<sup>43</sup> <http://www.ucl.ac.uk/research/images/The-Wisdom-Agenda.pdf>.



## CONCLUSION

Research in universities has been devoted, primarily, to acquiring knowledge and technological know-how. But knowledge and technological know-how increase our power to act which, without wisdom, can lead to as much harm as benefit. Current global crises, and especially the most serious, global warming, have arisen in this way. We urgently need to bring about a revolution in our universities so that they come to seek and promote wisdom—wisdom being understood to be the capacity to realize what is of value in life, thus including knowledge, understanding and technological know-how, but much else besides. Universities need to take up the task of helping humanity learn how to make progress towards as good a world as possible. This revolution—intellectual, institutional and cultural—if it ever comes about, will be comparable in its long-term impact to that of the Renaissance, the scientific revolution, or the Enlightenment. There are signs that this urgently needed revolution may already be underway. If so, it is happening with agonizing slowness, in a dreadfully muddled and piecemeal way. The underlying intellectual reasons for academic change need to be much more widely appreciated, to help give direction, coherence and a rationale to the nascent academic revolution, and to help ensure that the intellectual value and integrity of science and scholarship are strengthened and not subverted.

ABOUT THE AUTHOR — Emeritus Reader, Honorary Senior Research Fellow, University College London. He has published six books: 1976, *What's Wrong with Science?*, Bran's Head Books, Hayes, Middlesex; 1984, *From Knowledge to Wisdom: A Revolution in the Aims and Methods of Science*, Basil Blackwell, Oxford; 1998, *The Comprehensibility of the Universe: A New Conception of Science*, Oxford University Press, Oxford; 2001, *The Human World in the Physical Universe: Consciousness, Free Will and Evolution*, Rowman and Littlefield, Lanham; 2004, *Is Science Neurotic?*, Imperial College Press, London; 2007, *From Knowledge to Wisdom: A Revolution for Science and the Humanities*, 2nd edition, revised and enlarged, Pentire Press, London; 2008, ed., with R. Barnett, *Wisdom in the University*, Routledge, London; 2009, *What's Wrong With Science?*, 2nd edition, revised with new preface, Pentire Press, London. 2010, *Cutting God in Half— and Putting the Pieces together Again: A New Approach to Philosophy*, Pentire Press, London.

He has founded Friends of Wisdom, an international group of scholars and educationalists concerned that universities should seek and promote wisdom, and not just acquire knowledge: see [www.knowledgetowisdom.org/](http://www.knowledgetowisdom.org/)