From Knowledge to Wisdom
Assessment and Prospects after Three Decades

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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 without 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. This is an argument I have propounded during the last three decades in six books, over thirty papers, and countless lectures delivered in universities and conferences all over the UK, Europe and north America. Despite all this effort, the argument has, by and large, been ignored. What is really surprising is that philosophers have paid no attention, despite the fact that that this body of work claims to solve the profoundly important philosophical problem: *What kind of inquiry best helps us make progress towards as good a world as possible?* There are, nevertheless, indications that some scientists and university administrators are beginning to become aware of the urgent need for science, and universities, to change. This is prompted, partly by growing awareness of the seriousness of environmental problems, especially global warming, and partly by a concern to improve the relationship between science and the public. So far, however, these changes have been small-scale, scattered and piecemeal. What we require is for academics and non-academics alike to wake up to the urgent need for change so that we may come to possess what we so strikingly and disastrously lack at present: a kind of inquiry rationally devoted to helping humanity make progress towards as good a world as possible.

1. Introduction

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 without 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. We need a new kind of inquiry that puts problems of living, individual, social and global, at the heart of the academic enterprise, more specialized problems of knowledge and technological know-how emerging out of and feeding back into the central concern to help solve problems of living.

The intellectual and institutional revolution we require would affect every branch and aspect of academic inquiry. It would have dramatic consequences for the institutional structure of universities, and for the relationship between universities and the public. The character of natural science, social inquiry and the humanities, and the relationships between these broad areas of research, would all be affected. There are implications for both research and education. Research pursued for its own sake – so-called "pure" research – and applied research would both be affected.

The revolution is needed for intellectual and humanitarian reasons combined. What we have at present – inquiry devoted primarily to the pursuit of knowledge – is damagingly irrational when judged from the all-important standpoint of helping humanity realize what is of value in life. It is this wholesale, structural, institutionalized *irrationality* which is in part responsible for the creation of our current global problems, and our incapacity to deal with them effectively and humanely. In order to learn how to tackle these problems effectively and humanely, it is essential that we bring into existence the new kind of inquiry, rationally devoted to that end.

This is an argument I have propounded during the last three decades in six books, over thirty papers, and countless lectures delivered in universities and conferences all over the UK, Europe and north America.[1] Despite all this effort, and despite critical praise for my work, the argument has, by and large, been ignored. What is really surprising is that few philosophers have paid any attention, despite the fact that this body of work claims to solve the profoundly important philosophical problem: *What kind of inquiry best helps us make progress towards as good a world as possible?*

There are, nevertheless, indications that some scientists and university administrators are beginning to become aware of the urgent need for science, and universities, to change. This is prompted, partly by growing awareness of the seriousness of environmental problems, especially global warming, and partly by a concern to improve

the relationship between science and the public. So far, however, these changes have been small-scale, scattered and piecemeal. What we require is for academics and non-academics alike to wake up to the urgent need for change so that we may come to possess what we so strikingly and disastrously lack at present: a kind of inquiry rationally devoted to helping humanity make progress towards as good a world as possible.

2. Outline of the Argument

Elsewhere, I have spelled out the argument for the urgent need for the intellectual revolution, from knowledge to wisdom, in some detail.[2] Here, I will be as brief as I can. First, I distinguish two kinds of inquiry, which I shall call *knowledge-inquiry* and *wisdom-inquiry*. At the core of knowledge-inquiry there is a philosophy of science which I shall call *standard empiricism*; the corresponding philosophy of science at the core of wisdom-inquiry I call *aim-oriented empiricism*. Standard empiricism and knowledge-inquiry are what we have inherited from the past and what we still have, by and large, today. Aim-oriented empiricism and wisdom-inquiry are what emerge when knowledge-inquiry is modified just sufficiently to ensure elementary rules of rational problem-solving and aim-pursuing are implemented, granted that the basic aim is to help promote human welfare, help people realize what is of value in life.

There are two arguments. The first appeals to *problem-solving rationality*, the second to *aim-pursuing rationality*. These establish that knowledge-inquiry is indeed damagingly irrational – three of the four most elementary rules of rational problem-solving are violated – wisdom-inquiry being what emerges when knowledge-inquiry is modified just sufficiently to cure it of its grave rationality defects.[3]

3. First Argument: Problem-Solving Rationality

Knowledge-inquiry demands that a sharp split be made between the social or humanitarian aims of inquiry and the *intellectual* aim. The intellectual aim is to acquire knowledge of truth, nothing being presupposed about the truth. Only those considerations may enter into the intellectual domain of inquiry relevant to the determination of truth – claims to knowledge, results of observation and experiment, arguments designed to establish truth or falsity. Feelings and desires, values, ideals, political and religious views, expressions of hopes and fears, cries of pain, articulation of problems of living: all these must be ruthlessly excluded from the intellectual domain of inquiry as having no relevance to the pursuit of knowledge – although of course inquiry can seek to develop factual knowledge about these things, within psychology, sociology or anthropology. Within natural science, an even more severe censorship system operates: an idea, in order to enter into the intellectual domain of science, must be an empirically testable claim to factual knowledge.

The basic idea of knowledge-inquiry, then, is this. First, knowledge is to be acquired; then it can be applied to help solve social problems. For this to work, authentic objective knowledge must be acquired. Almost paradoxically, human values and aspirations must be excluded from the intellectual domain of inquiry so that genuine factual knowledge is acquired and inquiry can be of genuine human value, and can be capable of helping us realize our human aspirations.[4]

This is the conception of inquiry which, I claim, violates reason in a wholesale, structural and damaging manner.

What do I mean by "reason"? As I use the term here, rationality appeals to the idea that there are general methods, rules or strategies which, if put into practice, give us our best chance, other things being equal, of solving our problems, realizing our aims. Rationality is an aid to success, but does not guarantee success, and does not determine what needs to be done.[5]

Four elementary rules of reason, alluded to above, are:

(1) Articulate and seek to improve the articulation of the basic problem(s) to be solved.
(2) Propose and critically assess alternative possible solutions.
(3) When necessary, break up the basic problem to be solved into a number of *specialized* problems – preliminary, simpler, analogous, subordinate problems – (to be tackled in accordance with rules (1) and (2)), in an attempt to work gradually toward a solution to the basic problem to be solved.
(4) Inter-connect attempts to solve the basic problem and specialized problems, so that basic problem-solving may guide, and be guided by, specialized problem-solving. [6]

Two preliminary points now need to be made.

First, granted that academic inquiry has, as its fundamental aim, to help promote human welfare by intellectual and educational means,[7] then the *problems* that inquiry fundamentally ought to try to help solve are problems of living, problems of action. From the standpoint of achieving what is of value in life, it is what we *do*, or refrain from doing, that ultimately matters. Even where new knowledge and technological know-how are relevant to the achievement of what is of value – as they are in medicine or agriculture, for example – it is always what this new knowledge or technological know-how enables us to *do* that matters. All the global problems discussed above require, for their resolution, not merely new knowledge, but rather new policies, new institutions, new ways of living. Scientific knowledge, and associated technological know-how have, if anything, as we have seen, contributed to the creation of these problems in the first place. Thus problems of living – problems of poverty, ill-health, injustice, deprivation – are solved by what we do, or refrain from doing; they are not solved by the mere provision of knowledge (except when a problem of living *is* a problem of knowledge).

Second, in order to achieve what is of value in life more successfully than we do at present, we need to discover how to resolve conflicts and problems of living in more *cooperatively rational* ways than we do at present. There is a spectrum of ways in which conflicts can be resolved, from murder or all out war at the violent end of the spectrum, via enslavement, threat of murder or war, threats of a less extreme kind, manipulation, bargaining, voting, to cooperative rationality at the other end of the spectrum, those involved seeking, by rational means, to arrive at that course of action which does the best justice to the interests of all those involved. A basic task for a kind of academic inquiry that seeks to help promote human welfare must be to discover how conflict resolution can be moved away from the violent end of the spectrum towards the cooperatively rational end.

Granted this, and granted that the above four rules of reason are put into practice then, at the most fundamental level, academic inquiry needs to:

(1) Articulate, and seek to improve the articulation of, personal, social and global problems of living that need to be solved if the quality of human life is to be enhanced (including those indicated above);
(2) Propose and critically assess alternative possible solutions – alternative possible *actions*, *policies*, *political programmes*, *legislative proposals*, *ideologies*, *philosophies of life*.

In addition, of course, academic inquiry must:

(3) Break up the basic problems of living into subordinate, specialized problems – in particular, specialized problems of knowledge and technology.
(4) Inter-connect basic and specialized problem-solving.

Academic inquiry as it mostly exists at present puts (3) into practice to splendid effect. The intricate maze of specialized disciplines devoted to improving knowledge and technological know-how that go to make up current academic inquiry is the result. But, disastrously, what we have at present, academic inquiry devoted primarily to improving knowledge, fails to put (1), (2) and (4) into practice. In pursuing knowledge, academic inquiry may articulate problems of knowledge, and propose and critically assess possible solutions, possible claims to knowledge – factual theses, observational and experimental results, theories. But, as we have seen, problems of *knowledge* are not (in general) problems of *living*; and solutions to problems of *knowledge* are not (in general) solutions to problems of *living*. In so far as academia does at present put (1) and (2) into practice, in departments of social science and policy studies, it does so only at the periphery, and not as its central, fundamental intellectual task.

In short, academic inquiry devoted primarily to the pursuit of knowledge, when construed as having the basic humanitarian aim of helping to enhance the quality of human life by intellectual means, fails to put the two most elementary rules of reason into practice (rules (1) and (2)). Academic inquiry fails to do (at a fundamental level) what it most needs to do, namely (1) articulate problems of living, and (2) propose and critically assess possible solutions. And furthermore, as a result of failing to explore the basic problems that need to be solved, academic inquiry cannot put the fourth rule of rational problem-solving into practice either, namely (4) inter-connect basic and specialized problem-solving. As I have remarked, *three* of the four most elementary rules of rational problem-solving are violated. (For a more detailed development of this argument see Maxwell, 1980, 1984a or 2007a, 2004a, 2010a.)

This gross structural irrationality of contemporary academic inquiry has profoundly damaging consequences for humanity. As I have pointed out above, granted that our aim is to contribute to human welfare by intellectual means, the basic problems we need to solve are problems of living, problems of action, not problems of knowledge. In failing to give intellectual priority to problems of living, knowledge-inquiry fails to tackle what most needs to be tackled in order to contribute to human welfare. In devoting itself to acquiring knowledge in a way that is unrelated to sustained concern about what humanity's most urgent problems are, as a result of failing to put (1) and (2) into practice, and thus failing to put (4) into practice as well, the danger is that scientific and technological research will respond to the interests of the powerful and the wealthy,

rather than to the interests of the poor, of those most in need. Scientists, officially seeking knowledge of truth *per se*, have no official grounds for objecting if those who fund research – governments and industry – decide that the truth to be sought will reflect their interests, rather than the interests of the world's poor. And priorities of scientific research, globally, do indeed reflect the interests of the first world, rather than those of the third world.[8]

Knowledge and technology successfully pursued in a way that is not rationally subordinated to the tackling of more fundamental problems of living, through the failure to put (1), (2) and (4) into practice, is bound to lead to the kind of global problems discussed above, problems that arise as a result of newly acquired powers to act being divorced from the ability to act wisely. The creation of our current global problems, and our inability to respond adequately to these problems, has much to do, in other words, with the long-standing, rarely noticed, structural *irrationality* of our institutions and traditions of learning, devoted as they are to acquiring knowledge dissociated from learning how to tackle our problems of living in more cooperatively rational ways. Knowledge-inquiry, because of its irrationality, is designed to *intensify*, not help *solve*, our current global problems.[9]
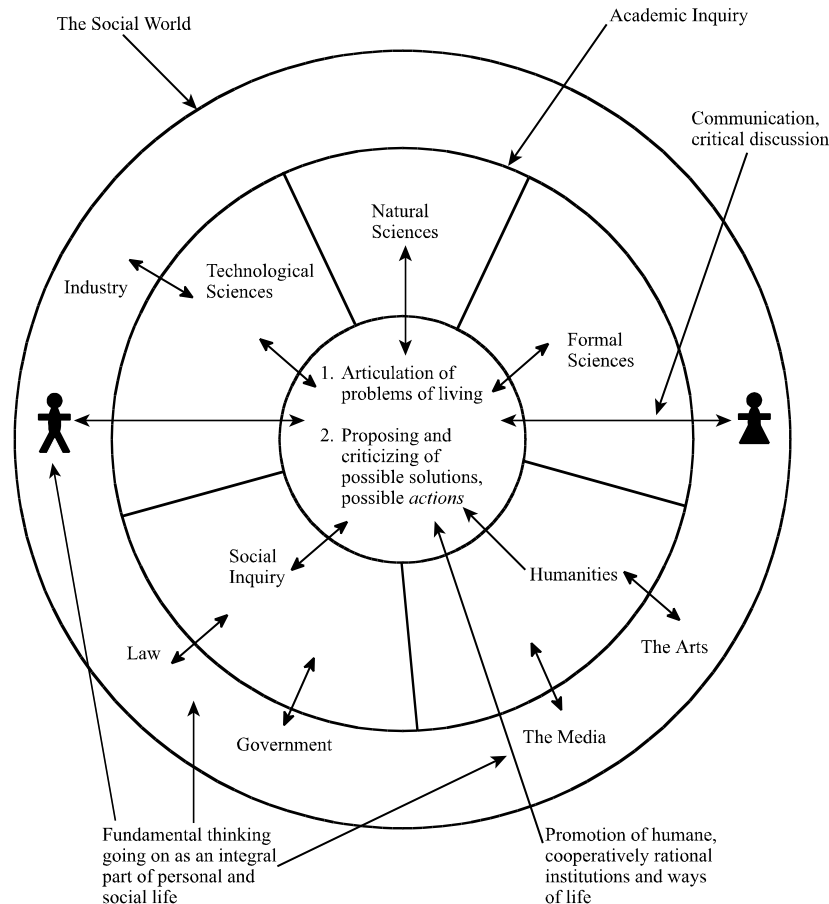
**Figure 1: Wisdom-Inquiry Implementing Problem-Solving Rationality
(Please Enlarge to Read)**

4. Wisdom-Inquiry: Problem-Solving Version

At once the question arises: What would a kind of inquiry be like that *is* devoted, in a genuinely rational way, to promoting human welfare by intellectual means? The answer is *wisdom-inquiry*.

As a first step at characterizing wisdom-inquiry, we may take knowledge-inquiry (at its best) and modify it just sufficiently to ensure that all four elementary rules of rational problem-solving, indicated above, are built into its intellectual and institutional structure: see Figure 1.

The primary change that needs to be made is to ensure that academic inquiry implements rules (1) and (2). It becomes the fundamental task of social inquiry and the humanities (1) to articulate, and seek to improve the articulation of, our problems of living, and (2) to propose and critically assess possible solutions, from the standpoint of their practicality and desirability. In particular, social inquiry has the task of discovering how conflicts may be resolved in less violent, more cooperatively rational ways. It also has the task of promoting such tackling of problems of living in the social world beyond academe. Social inquiry is, thus, not primarily social *science*, nor, primarily, concerned to acquire knowledge of the social world; its primary task is to promote more cooperatively rational tackling of problems of living in the social world. Pursued in this way, social inquiry is intellectually more fundamental than the natural and technological sciences, which tackle subordinate problems of knowledge, understanding and technology, in accordance with rule (3). In Figure 1, implementation of rule (3) is represented by the specialized problem-solving of the natural, technological and formal sciences, and more specialized aspects of social inquiry and the humanities. Rule (4) is represented by the two-way arrows linking fundamental and specialized problem-solving, each influencing the other.

One can go further. According to this view, the thinking that we engage in as we live, in seeking to realize what is of value to us, is intellectually more fundamental than the whole of academic inquiry (which has, as its basic purpose, to help cooperatively rational thinking and problem-solving in life to flourish). Academic thought emerges as a kind of specialization of personal and social thinking in life, the result of implementing rule (3); this means there needs to be a two-way interplay of ideas, arguments and experiences between the social world and academia, in accordance with rule (4). This is represented, in figure 1, by the two-way arrows linking academic inquiry and the social world.

The natural and technological sciences need to recognize three domains of discussion: evidence, theory, and aims. Discussion of aims seeks to identify that highly problematic region of overlap between that which is discoverable, and that which it is of value to discover. Discussion of what it is of value to discover interacts with social inquiry, in accordance with rule (4).

5. Second Argument: Aim-Oriented Rationality

So much for my first argument in support of wisdom-inquiry. I come now to my second argument, which appeals to, and modifies, the Enlightenment programme of learning from scientific progress how to achieve social progress towards an enlightened world.

In order to implement this programme properly, it is 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 endeavour, whatever the aims may be, and not just applicable to the endeavour of improving knowledge.
3. The correctly generalized progress-achieving methods then need to be exploited correctly in the great human endeavour of trying to make social progress towards an enlightened, wise, civilized world.

Unfortunately, the *philosophes* of the 18th century Enlightenment got all three points wrong. And as a result these blunders, undetected and uncorrected, are built into the intellectual-institutional structure of academia as it exists today.[10]

First, the *philosophes* failed to capture correctly the progress-achieving methods of natural science. From D'Alembert in the 18th century to Popper in the 20th (Popper, 1959, 1963), 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 explanatory. This orthodox view, which I call *standard empiricism* is, however, untenable. If taken literally, it would instantly bring science to a standstill. For, given any accepted 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. 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 theory applies in addition to empirical success.[11] 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.[12]

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 17th 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: see figure 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. 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. (A basic aim of science is to discover in what precise way the universe is comprehensible, this aim evolving as assumptions about comprehensibility evolve.) There is positive feedback between improving knowledge, and improving aims-and-methods, improving knowledge-about-how-to-improve-knowledge. This is the nub of scientific rationality, the methodological key to the unprecedented success of science.[13] Science adapts its nature to what it discovers about the nature of the universe (see Maxwell, 1974, 1976a, 1984a or 2007a, 1998, 2004a, 2005b, 2007c, 2010a, chapter 5).

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 with *values*, and the *social uses* or *applications* of science. It can be generalized so as to apply to the difference 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 (Maxwell, 2004a, pp. 41-7).

So much for the first blunder of the traditional Enlightenment, and how to put it right.

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.

Third, and most disastrously of all, the *philosophes* failed completely to try to apply such generalized, hierarchical progress-achieving methods 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.[14] 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 Figure 3. It is just this that the *philosophes* failed to do. Instead of applying the hierarchical methodology 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. And this ancient blunder, developed throughout the 19th century by J.S. Mill, Karl Marx and many others, and built into academia in the early 20th century with
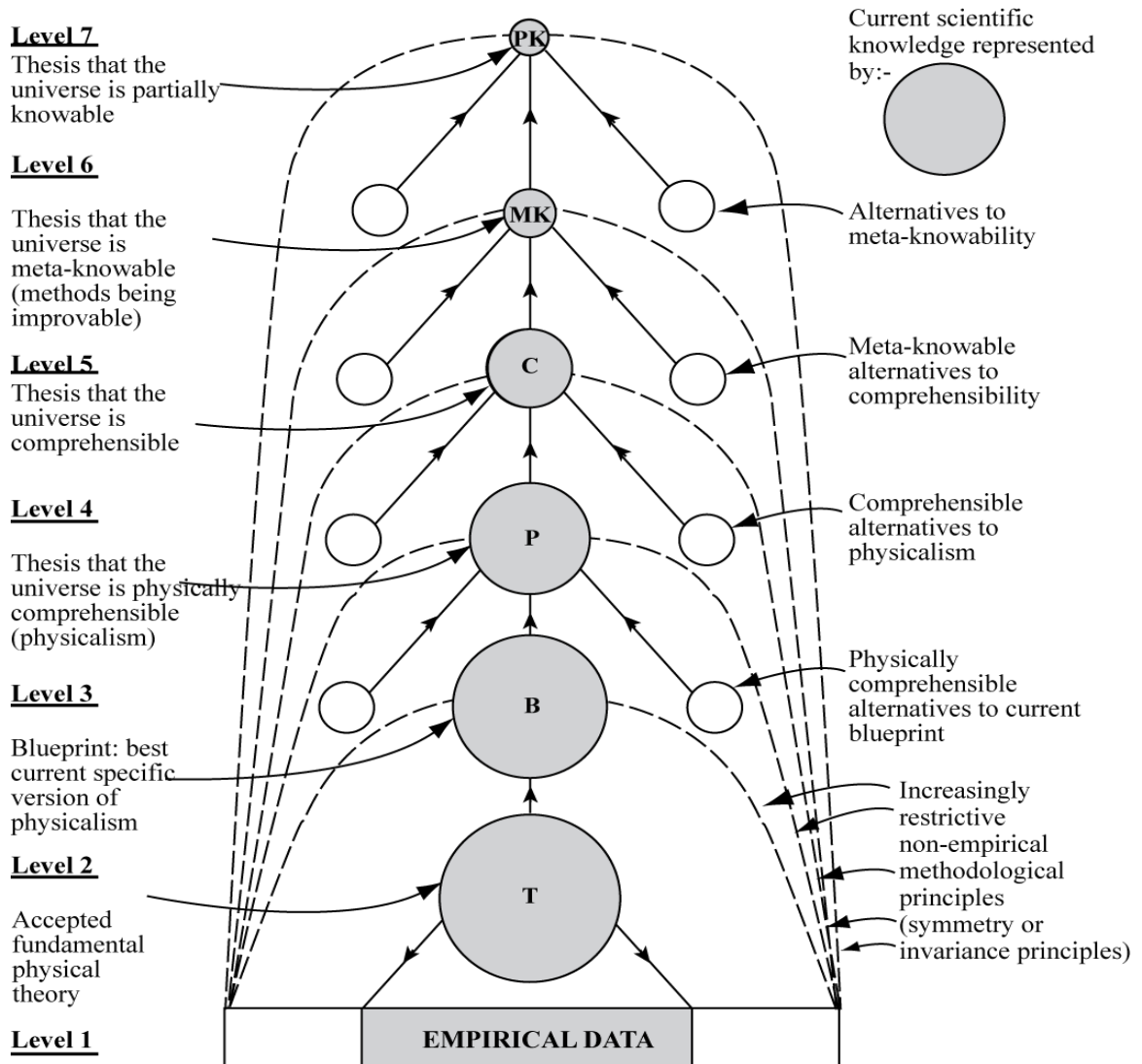

Level 7
Thesis that the universe is partially knowable

Level 6
Thesis that the universe is meta-knowable (methods being improvable)

Level 5
Thesis that the universe is comprehensible

Level 4
Thesis that the universe is physically comprehensible (physicalism)

Level 3
Blueprint: best current specific version of physicalism

Level 2
Accepted fundamental physical theory

Level 1

PK

MK

C

P

B

T

EMPIRICAL DATA

Current scientific knowledge represented by:-

Alternatives to meta-knowability

Meta-knowable alternatives to comprehensibility

Comprehensible alternatives to physicalism

Physically comprehensible alternatives to current blueprint

Increasingly restrictive non-empirical methodological principles (symmetry or invariance principles)

Figure 2: Hierarchical Conception of Science of Aim-Oriented Empiricism

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 social science (Maxwell, 1984a or 2007a, chapters 3, 6 and 7; 2000a).

Properly implemented, in short, 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. Academia would be a kind of people's civil service, doing openly for the public what actual civil services are supposed to do in secret for governments. Academia would have just sufficient power (but no more) to retain its independence from government, industry, the press, public opinion, and other centres of power and influence in the social world. It would seek to learn from, educate, and argue with the great social world beyond, but would not dictate. Academic thought would be pursued as a specialized, subordinate part of what is really important and fundamental: the thinking that goes on, individually, socially and institutionally, in the social world, guiding individual, social and institutional actions and life. 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 into social and institutional life the kind of aim-evolving, hierarchical methodology indicated above, generalized from science, 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).
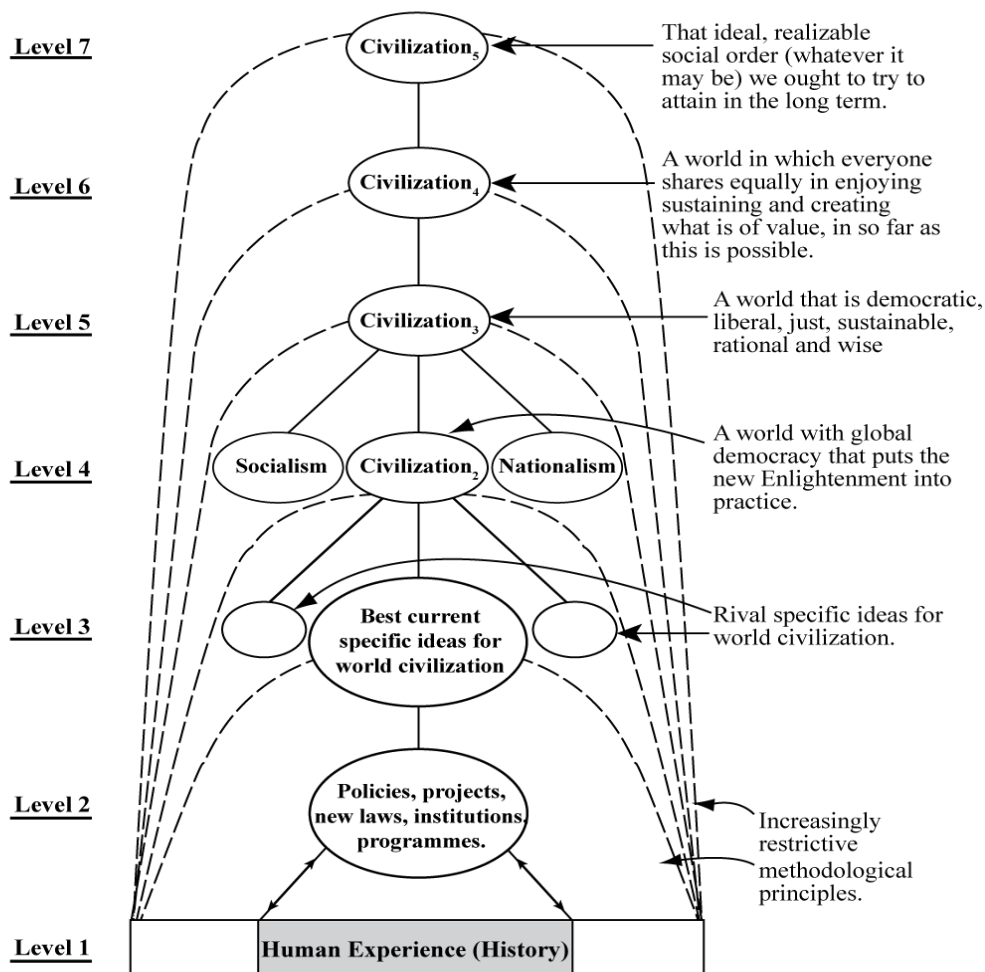
Figure 3: Hierarchical Social Methodology Generalized from Science

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 incorporates 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 (Maxwell, 1976a, p. 5). It is time we healed the great rift in our culture, so graphically depicted by Snow (1986).

 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.

6. Cultural Dimension of Wisdom-Inquiry

Wisdom-inquiry does not just do better justice to the social or practical dimension of inquiry than knowledge-inquiry; it does better justice to the "intellectual" or "cultural" aspects as well.

 From the standpoint of the intellectual or cultural aspect of inquiry, what really matters is the desire that people have to 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." (Einstein, 1973, p. 80).

 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." (Einstein, 1973, p. 11).

 Knowledge-inquiry, by contrast, all too often fails to nourish "the holy curiosity of inquiry" (Einstein, 1949, p. 17), 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 responsible a way as possible. [15] 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".[16] 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. (These considerations are developed further in Maxwell, 1976a; 1984a or 2007a; and 2004a.)

In order to enhance our understanding of persons as beings of value, potentially and actually, we need to understand them empathetically, or "personalistically", 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. (For a fuller exposition of such an account of empathic or personalistic understanding see Maxwell, 1984a, pp. 171-189 and chapter 10, or 2007a, pp. 194-213 and chapter 10; and 2001a, chapters 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 (Maxwell, 1984a, pp. 183-5 or 207a, pp. 206-8). It has the status merely of "folk psychology", on a par with "folk physics".

7. Objections
It may be objected that the traditional Enlightenment does not dominate current academic inquiry to the extent that I have assumed. But grounds for holding that it does are given in chapter six of my *From Knowledge to Wisdom.* There I looked at the

following: (1) books about the modern university; (2) the philosophy and sociology of science; (3) statements of leading scientists; (4) Physics Abstracts; (5) Chemistry, Biology, Geo and Psychology Abstracts; (6) journal titles and contents; (7) books on economics, sociology and psychology; (8) philosophy. In 1984, the year *From Knowledge to Wisdom* was published, there can be no doubt whatsoever that the traditional Enlightenment (or "the philosophy of knowledge" as I called it in the book) dominated academic inquiry.

Have things changed since then? The revolution advocated by *From Knowledge to Wisdom*, and argued for here, has not occurred. There is still, amongst the vast majority of academics today, no awareness at all that a more intellectually rigorous and humanly valuable kind of inquiry than that which we have at present, exists as an option. In particular, social inquiry continues to be taught and pursued as social *science*, and not as social *methodology*. Fairly recently I undertook an examination, at random, of thirty-four introductory books on sociology, published between 1985 and 1997. Sociology, typically, is defined as "the scientific study of human society and social interactions" (Tischler, 1996, p. 4), as "the *systematic, sceptical study of human society*" (Macionis and Plummer, p. 4), or as having as its basic aim "to understand human societies and the forces that have made them what they are" (Lenski, 1995, p. 5). Some books take issue with the idea that sociology is the *scientific* study of society, or protest at the male dominated nature of sociology (for example, Abott and Wallace, 1990, p. 3 and p. 1). Nowhere did I find a hint of the idea that a primary task of sociology, or of social inquiry more generally, might be to help build into the fabric of social life progress-achieving methods, generalized from those of science, designed to help humanity resolve its conflicts and problems of living in more cooperatively rational ways than at present.

The tackling of problems of living rather than problems of knowledge does of course go on within the academic enterprise as it is at present constituted, within such disciplines as economics, development studies, policy studies, peace studies, medicine, agriculture, engineering, and elsewhere. But this does not tell against the point that the primary task of academic inquiry at present is, first, to acquire knowledge and technological know-how, and then, second, to apply it to help solve problems of living. It does not, in other words, tell against the point that it is the traditional Enlightenment that is the dominant influence on the nature, the aims and methods, the whole character and structure of academic inquiry.

It may be objected that it is all to the good that the academic enterprise today does give priority to the pursuit of knowledge over the task of promoting wisdom and civilization. Before problems of living can be tackled rationally, knowledge must first be acquired.[17]

I have six replies to this objection.

First, even if the objection were valid, it would still be vital for a kind of inquiry designed to help us build a better world to include rational exploration of problems of living, and to ensure that this guides priorities of scientific research (and is guided by the results of such research).

Second, the validity of the objection becomes dubious when we take into account the considerable success people met with in solving problems of living in a state of extreme ignorance, before the advent of science. We still today often arrive at solutions to problems of living in ignorance of relevant facts.

Third, the objection is not valid. In order to articulate problems of living and explore imaginatively and critically possible solutions (in accordance with Popper's conception of rationality) we need to be able to act in the world, imagine possible actions and share our imaginings with others: in so far as some common sense knowledge is implicit in all this, such knowledge is required to tackle rationally and successfully problems of living. But this does not mean that we must give intellectual priority to acquiring new relevant knowledge before we can be in a position to tackle rationally our problems of living.

Fourth, simply in order to have some idea of what kind of knowledge or know-how it is *relevant* for us to try to acquire, we must *first* have some provisional ideas as to what our problem of living is and what we might do to solve it. Articulating our problem of living and proposing and critically assessing possible solutions needs to be intellectually prior to acquiring relevant knowledge simply for this reason: we cannot know what new knowledge it is *relevant* for us to acquire until we have at least a preliminary idea as to what our problem of living is, and what we propose to do about it. A slight change in the way we construe our problem may lead to a drastic change in the kind of knowledge it is relevant to acquire: changing the way we construe problems of health, to include *prevention* of disease (and not just curing of disease) leads to a dramatic change in the kind of knowledge we need to acquire (importance of exercise, diet etc.). Including the importance of avoiding *pollution* in the problem of creating wealth by means of industrial development leads to the need to develop entirely new kinds of knowledge.

Fifth, relevant knowledge is often hard to acquire; it would be a disaster if we suspended life until it had been acquired. Knowledge of how our brains work is presumably highly relevant to all that we do but clearly, suspending rational tackling of problems of living until this relevant knowledge has been acquired would not be a sensible step to take. It would, in any case, make it impossible for us to acquire the relevant knowledge (since this requires scientists to act in doing research). Scientific research is itself a kind of action carried on in a state of relative ignorance.

Sixth, the capacity to act, to live, more or less successfully in the world, is more fundamental than (propositional) knowledge. Put in Rylean terms, 'knowing how' is more fundamental than 'knowing that' (Ryle, 1949, ch. II). All our knowledge is but a development of our capacity to act. Dissociated from life, from action, knowledge stored in libraries is just paper and ink, devoid of meaning. In this sense, problems of living are more fundamental than problems of knowledge (which are but an aspect of problems of living); giving intellectual priority to problems of living quite properly reflects this point.[18]

It may be objected that in employing aim-oriented rationality in an attempt to help create a more civilized world, in the way indicated above, the new Enlightenment falls foul of Popper's strictures against Utopian social engineering (Popper, 1969, vol. 1, ch. 9; 1962, pp. 64-92). I have three replies to this objection. First, to the extent that piecemeal social engineering, of the kind advocated by Popper, is indeed the rational way to make progress towards a more civilized world, this will be advocated by wisdom-inquiry. Second, when we take into account the unprecedented *global* nature of many of our most serious problems, indicated at the beginning of this essay, we may well doubt that piecemeal social engineering is sufficient. Third, Popper's distinction between piecemeal and Utopian social engineering is altogether too crude: it overlooks entirely what has been advocated here, aim-oriented rationalistic social engineering, with its emphasis on

developing increasingly cooperatively rational resolutions of human conflicts and problems in full recognition of the inherently problematic nature of the aim of achieving greater civilization.[19]

All those to any degree influenced by Romanticism and the counter-Enlightenment will object strongly to the idea that we should learn from scientific progress how to achieve social progress towards civilization; they will object strongly to the idea of allowing conceptions of rationality, stemming from science, to dominate in this way, and will object even more strongly to the idea, inherent in the new Enlightenment, that we need to create a more aim-oriented rationalistic social world.[20]

Directed at the traditional Enlightenment, objections of this kind may have some validity; but directed at the new Enlightenment, they have none. As I have emphasized elsewhere, aim-oriented rationality amounts to a synthesis of traditional rationalist and romantic ideals, and not to the triumph of the first over the second. In giving priority to the realization of what is of value in life, and in emphasizing that rationality demands that we seek to improve aims as we proceed, the new Enlightenment requires that rationality integrates traditional Rationalist and Romantic values and ideals of integrity. Imagination, emotion, desire, art, empathic understanding of people and culture, the imaginative exploration of aims and ideals, which tend to be repudiated as irrational by traditional Rationalism, but which are prized by Romanticism, are all essential ingredients of aim-oriented rationality. Far from crushing freedom, spontaneity, creativity and diversity, aim-oriented rationality is essential for the desirable flourishing of these things in life.[21]

Many historians and sociologists of science deny that there is any such thing as scientific method or scientific progress, and will thus find the basic idea of this essay absurd.[22] These writers are encouraged in their views by the long-standing failure of scientists and philosophers of science to explain clearly what scientific method is, and how it is to be justified. This excuse for not taking scientific method and progress seriously is, however, no longer viable: as I have indicated above, reject standard empiricism in all its forms, and it becomes clear how scientific method and progress are to be characterized and justified, in a way which emphasizes the rational interplay between evolving knowledge and evolving aims and methods of science.[23] In a world dominated by the products of scientific progress it is quixotic in the extreme to deny that such progress has taken place.

Finally, those of a more rationalist persuasion may object that science is too different from political life for there to be anything worthwhile to be learnt from scientific success about how to achieve social progress towards civilization.[24] (a) In science there is a decisive procedure for eliminating ideas, namely, empirical refutation: nothing comparable obtains, or can obtain, in the political domain. (b) In science experiments or trials may be carried out relatively painlessly (except, perhaps, when new drugs are being given in live trials); in life, social experiments, in that they involve people, may cause much pain if they go wrong, and may be difficult to stop once started. (c) Scientific progress requires a number of highly intelligent and motivated people to pursue science on the behalf of the rest of us, funded by government and industry; social progress requires almost *everyone* to take part, including the stupid, the criminal, the mad or otherwise handicapped, the ill, the highly unmotivated; and in general there is no payment. (d) Scientists, at a certain level, have an agreed, common objective: to improve

knowledge. In life, people often have quite different or conflicting goals, and there is no general agreement as to what civilization ought to mean, or even whether it is desirable to pursue civilization in *any* sense. (e) Science is about fact, politics about value, the quality of life. This difference ensures that science has nothing to teach political action (for civilization). (f) Science is male-dominated, fiercely competitive, and at times terrifyingly impersonal; this means it is quite unfit to provide any kind of guide for life.

 Here, briefly, are my replies. (a) Some proposals for action can be shown to be unacceptable quite decisively as a result of experience acquired through attempting to put the proposal into action. Where this is not possible, it may still be possible to assess the merits of the proposal to some extent by means of experience. If assessing proposals for action by means of experience is much more indecisive than assessing scientific theories by means of experiment, then we need, all the more, to devote our care and attention to the former case. (b) Precisely because experimentation in life is so much more difficult than in science, it is vital that in life we endeavour to learn as much as possible from (i) experiments that we perform in our imagination, and (ii) experiments that occur as a result of what actually happens. (c) Because humanity does not have the aptitude or desire for wisdom that scientists have for knowledge, it is unreasonable to suppose that progress towards global wisdom could be as explosively rapid as progress in science. Nevertheless progress in wisdom might go better than it does at present. (d) Cooperative rationality is only feasible when there is the common desire of those involved to resolve conflicts in a cooperatively rational way. (e) Aim-oriented rationality can help us improve our decisions about what is desirable or of value, even if it cannot reach decisions for us. (f) In taking science as a guide for life, it is the progress-achieving methodology of science to which we need to attend. It is this that we need to generalize in such a way that it becomes fruitfully applicable, potentially, to all that we do. That modern science is male-dominated, fiercely competitive, and at times terrifyingly impersonal should not deter us from seeing what can be learned from the progress-achieving methods of science – unless, perhaps, it should turn out that being male-dominated, fiercely competitive and impersonal is essential to scientific method and progress. (But this, I submit, is not the case.)

8. Implications

 As I have already indicated, transforming universities so that they put wisdom-inquiry into practice instead of knowledge-inquiry would have implications and repercussions for every branch and aspect of academia – and for the great social world beyond. It would have dramatic consequences for the whole institutional and intellectual structure of academic inquiry, how it is related to government, industry, the public.[25]

 To begin with, I must emphasize, there are *intellectual* consequences. Wisdom-inquiry is more rigorous than knowledge-inquiry. Whereas knowledge-inquiry violates three of the four most elementary rules of rational problem-solving conceivable, wisdom-inquiry implements all four. Again, whereas knowledge-inquiry disavows, or "represses" real, problematic aims of natural science, and of academic inquiry more generally, wisdom-inquiry acknowledges these aims, provides a meta-methodological framework for their imaginative and critical exploration, thus facilitating the progressive *improvement* of these aims. This has dramatic consequences for our understanding of science and social inquiry, and for science and social inquiry themselves.

Furthermore, as I have argued at length elsewhere,[26] fundamental intellectual problems concerning the nature of science, and of inquiry more generally, are readily solved granted aim-oriented empiricism and wisdom-inquiry; these problems cannot be solved granted standard empiricism and knowledge-inquiry, and they have resisted resolution for centuries precisely because these latter views have been taken for granted. Most notably, the problems of induction, verisimilitude and simplicity, solved by aim-oriented empiricism, cannot be solved granted standard empiricism.[27] This constitutes dramatic intellectual grounds for rejecting standard empiricism and adopting and implementing aim-oriented empiricism in its stead.

The transition from standard to aim-oriented empiricism has implications, not just for our understanding of science, but also for science itself. Aim-oriented empiricism, as a result of making explicit problematic and implicit metaphysical assumptions of physics, provides theoretical physics with a fallible, non-mechanical, but nevertheless *rational* method for the discovery of fundamental new theories. In requiring, for rigour, that theoretical physics should include discussion of metaphysical, methodological, philosophical and epistemological ideas, aim-oriented empiricism transforms physics into something close to the natural philosophy of Newton's time. There is an astonishing extension in the scope of scientific knowledge: aim-oriented empiricism implies that science has already established (in so far as anything theoretical is established in science) that the universe is physically comprehensible. This is an item of current (conjectural) scientific knowledge (Maxwell, 1998). New possibilities emerge. I have indicated a way in which the universe may be physically comprehensible that differs dramatically from the traditional view. Instead of the underlying unity in the universe being the unity – the invariance – of basic dynamical laws, it consists in, rather the unity of a very special state of the universe, namely the big bang state.[28] Articulating implicit metaphysical ideas of physics even has potential implications for quantum theory. In a long series of papers, I have argued that adoption of a fundamentally *probabilistic* metaphysics provides a possible solution to the quantum wave/particle problem and leads to a fully micro-realistic version of quantum theory, free of defects that plague orthodox quantum theory, which captures all the empirical success of the orthodox theory but is empirically distinct from the orthodox theory for as yet unperformed experiments.[29]

Elsewhere, I have argued aim-oriented empiricism and wisdom-inquiry have intellectual implications for a wide range of disciplines: for mathematics,[30] for neuroscience,[31] for evolutionary theory,[32] for psychology, sociology, economics and political science,[33] and for philosophy. The whole character of philosophy is transformed.[34]

Here, now, are fifteen broad ways in which academic inquiry must change if aim-oriented empiricism and wisdom-inquiry are to be put into academic practice.

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-oriented rationality into personal, institutional 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.[35] 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. Academia becomes a kind of civil service for the public, doing openly and independently what actual civil services are supposed to do in secret for governments.

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.[36] 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 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.[37]

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.[38]

In addition, 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 existed. The virtual world government would also have the task of working out how an actual democratically elected world government might be created.[39]

8. Recent Indications that the Revolution May Be Underway

My efforts to start up a campaign to transform academia so that it becomes an educational resource to help humanity learn how to create a better world have not met with much success. I am not aware of any discipline, or any department in any university, that has changed as a result of my work. Few academics have even heard of my work. Even philosophers, aside from a few notable exceptions,[40] seem to be, by and large, ignorant of it, or indifferent to it – especially disappointing in view of the fact that the argument for the intellectual revolution is profoundly philosophical in character. And not just the argument: the outcome, the new conception of inquiry I argue for – *wisdom-inquiry* as it may be called – is, I claim, quintessentially philosophical in that it is the solution to a profoundly significant philosophical problem: *What kind of inquiry can best help us make progress towards a civilized world?*

Viewed from another perspective, however, my call for a revolution, for the implementation of wisdom-inquiry, has been astonishingly successful. During the last 10-20 years, numerous changes have occurred in academia that amount to a shift towards wisdom-inquiry – whether or not in response to any of my work. In what follows I concentrate on universities in the UK.

Perhaps the most significant of these steps is the creation of departments, institutions and research centres concerned with social policy, environmental degradation, climate change, poverty, injustice and war, and other matters such as medical ethics and community health. [41]

At Cambridge University, one can see the first hints of the institutional structure of wisdom-inquiry being superimposed upon the existing structure of knowledge-inquiry. As I have emphasized, wisdom-inquiry puts the intellectual tackling of problems of living at the heart of academic inquiry, this activity being conducted in such a way that it both influences, and is influenced by, more specialised research. Knowledge-inquiry, by contrast, organises intellectual activity into the conventional departments of knowledge: physics, chemistry, biology, history and the rest, in turn subdivided, again and again, into increasingly specialised research disciplines. But this knowledge-inquiry structure of ever more specialised research is hopelessly inappropriate when it comes to tackling problems of living. In order to tackle environmental problems, for example, in a rational and effective way, specialized research into a multitude of different fields, from geology, engineering and economics to climate science, biology, architecture and metallurgy, needs to be connected to, and coordinated with, the different aspects of environmental problems.[42] The sheer urgency of environmental problems has, it seems, forced Cambridge University to create the beginnings of wisdom-inquiry organization to deal with the issue. The "Cambridge Environmental Initiative" (CEI), launched in December 2004, distinguishes seven fields associated with environmental problems: conservation, climate change, energy, society, water waste built environment and industry, natural

hazards, society, and technology, and under these headings, coordinates some 102 research groups working on specialized aspects of environmental issues in some 25 different (knowledge-inquiry) departments.[43] The CEI holds seminars, workshops and public lectures to put specialized research workers in diverse fields in touch with one another, and to inform the public.

A similar coordinating, interdisciplinary initiative exists at Oxford University. This is the School of Geography and the Environment, founded in 2005 under another name. It is made up of five research "clusters", two previously established research centres, the Environmental Change Institute (founded in 1991) and the Transport Studies Institute, and three inter-departmental research programmes, the African Environments Programme the Oxford Centre for Water Research, and the Oxford branch of the Tyndall Centre (see below). The School has links with other such research centres, for example the UK Climate Impact Programme and the UK Energy Research Centre.

At Oxford University there is also the James Martin 21st Century School, founded in 2005 to "formulate new concepts, policies and technologies that will make the future a better place to be". It is made up of fifteen Institutes devoted to research that ranges from ageing, armed conflict, cancer therapy and carbon reduction to nanoscience, oceans, science innovation and society, the future of the mind, and the future of humanity. At Oxford there is also the Smith School of Enterprise and the Environment, founded in 2008 to help government and industry tackle the challenges of the 21st century, especially those associated with climate change.

Similar developments have taken place recently at my own university, University College London. Not only are there over 141 research institutes and centres at UCL, some only recently founded, many interdisciplinary in character, devoted to such themes as ageing, cancer, cities, culture, public policy, the environment, global health, governance, migration, and security. In addition, very recently, the attempt has been made to organize research at UCL around a few broad themes that include: global health, sustainable cities, intercultural interactions, and human wellbeing. This is being done so that UCL may all the better contribute to solving the immense global problems that confront humanity.

On the UCL website, the rationale for the global challenges initiative is spelled out in a way which echoes the case for wisdom-inquiry:

> The world is in crisis. Billions of us suffer from illness and disease, despite applicable preventions and cures. Life in our cities is under threat from dysfunctionality and climate change. The prospect of global peace and cooperation remains under assault from tensions between our nations, faiths and cultures. Our quality of life – actual and perceived – diminishes despite technological advances. These are global problems, and we must resolve them if future generations are to be provided with the opportunity to flourish.[44]

These developments, echoed in many other UK universities, can be regarded as first steps towards implementing wisdom-inquiry.

Equally impressive is the John Tyndall Centre for Climate Change Research, founded by 28 scientists from ten different institutions in 2000. It is based in six British universities, has links with six others, and is funded by three research councils: the

Natural Environment Research Council (NERC), the Engineering and Physical Sciences Research Council (EPSRC) and the Economic and Social Research Council (ESRC). The centre "brings together scientists, economists, engineers and social scientists, who together are working to develop sustainable responses to climate change through trans-disciplinary research and dialogue on both a national and international level [including] […] with business leaders, policy advisors, the media and the public in general".[45] It is clear from the centre's own account[46] that innovations in its work are strikingly in accordance with basic features of wisdom-inquiry. We have here, perhaps, the real beginnings of wisdom-inquiry being put into academic practice.

A similar organisation, modelled on the Tyndall Centre, is the UK Energy Research Centre (UKERC), launched in 2004, and also funded by NERC, EPSRC and ESRC. Its mission is to be a "centre of research, and source of authoritative information and leadership, on sustainable energy systems".[47] The UKERC coordinates research in some twelve British universities or research institutions and has also launched the National Energy Research Network (NERN), which seeks to link up the entire energy community, including people from academia, government, non-governmental organisations and business.

Another possible indication of a modest step towards wisdom-inquiry is the growth of peace studies and conflict resolution research. In the UK, the Peace Studies Department at Bradford University has quadrupled in size since 1984,[48] and is now the largest university department in this field in the world. INCORE, an International Conflict Research project, was established in 1993 at the University of Ulster in Northern Ireland, in conjunction with the United Nations University. It develops conflict resolution strategies and aims to influence policymakers and others involved in conflict resolution. Like the newly created environmental institutions just considered, INCORE is highly interdisciplinary in character, in that it coordinates work across the traditional knowledge departments of history, policy studies, politics, international affairs, sociology, geography, architecture, communications and social work as well as in peace and conflict studies.

Peace studies have also grown during the last two decades at Sussex University, Kings College London, Leeds University, Coventry University and London Metropolitan University. Recently created UK centres in the field include the Centre for Peace and Reconciliation Studies at Warwick University; the Desmond Tutu Centre for War and Peace at Liverpool Hope University; the Praxis Centre at Leeds Metropolitan University; the Crime and Conflict Centre at Middlesex University; and the International Boundaries Research Unit at Durham University.[49]

There are further indications of a general movement towards aspects of wisdom-inquiry. Demos, an independent UK think tank has, in recent years, convened conferences on the need for more public participation in discussion of the aims and priorities of scientific research and greater openness of science to the public.[50] This has been taken up by the Royal Society, which, in 2004, published a report on the potential benefits and hazards of nanotechnology produced by a group consisting of both scientists and non-scientists. The Royal Society also created a 'Science in Society Programme' in 2000, with the aims of promoting 'dialogue with society', of involving 'society positively in influencing and sharing responsibility for policy on scientific matters', and of

embracing 'a culture of openness in decision-making' which takes into account 'the values and attitudes of the public'.

A similar initiative is the 'science in society' research programme funded by the ESRC, which, in late 2007, produced six booklets on various aspects of the relationship between science and society. Many scientists now appreciate that non-scientists ought to contribute to discussions concerning science policy. There is a growing awareness among scientists and others of the role that values play in science policy, and of the importance of subjecting medical and other scientific research to ethical assessment. That universities are becoming increasingly concerned about these issues is indicated by the creation, in recent years, of many departments of 'science, technology and society', in the UK, the USA and elsewhere, their focus being interactions between science and society.

There are two initiatives that I have been involved with personally. The first is a new international group of over 230 scholars and educationalists called Friends of Wisdom, "an association of people sympathetic to the idea that academic inquiry should help humanity acquire more wisdom by rational means".[51] The second is a special issue of the journal *London Review of Education,* which was devoted to the theme 'wisdom in the university', and which appeared in June 2007.[52] By coincidence, another academic journal, *Social Epistemology*, brought out a special issue on a similar theme in the same month.[53] Later that year, 'History and Policy' was launched, a new initiative that seeks to bring together historians, politicians and the media, to work "for better public policy through an understanding of history"[54].

10. Conclusion

Our only hope of solving our problems successfully lies in tackling them *democratically*. This in turn requires that a majority of people on earth have a good understanding of what our problems are, and what we need to do about them. Democratically elected governments are unlikely to be able to do what is required if the people who elect them do not understand what our problems are, and what we need to do to resolve them. This in turn requires that we have in existence institutions of learning rationally devoted to helping humanity come to understand what our problems are, and what needs to be done. It is just this that we do not have at present. Instead we have institutions of learning devoted to the pursuit of *knowledge*. But it is knowledge and technological know-how, and the power that these engender, in the absence of wisdom, that have made possible the creation of our current global problems.

We urgently need to bring about a revolution in our schools and universities so that they come to seek and promote wisdom by rational means. Almost every branch and aspect of academic inquiry needs to change.

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. The outcome will be traditions and institutions of learning rationally designed to help us realize what is of value in life. There are a few scattered signs that this intellectual revolution, from knowledge to wisdom, is already under way. It will need, however, much wider cooperative support – from scientists, scholars, students, research councils, university administrators, vice chancellors, teachers, the media and the general public – if it is to become anything more than what it is at present, a fragmentary and often impotent movement of protest and opposition, often at

odds with itself, exercising little influence on the main body of academic work. I can hardly imagine any more important work for anyone associated with academia than, in teaching, learning and research, to help promote this revolution.

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Notes

[1] The six books are Maxwell (1976a; 1984a or, better, 2007a; 1998; 2001a; 2004a; 2010a). Six papers that give the best summarizes of the argument, each in a somewhat different way, are Maxwell (1980; 1992a; 2000a; 2007b; 2007c; 2008). The extent of my effort to communicate the basic idea can be gleaned from the following list of papers published over the years, all expounding aspects of the thesis and argument in various ways: Maxwell (1972; 1974; 1977; 1979; 1984b; 1985a; 1985b; 1987; 1992b; 1993a; 1997a; 1997b; 1999; 2000b; 2000c; 2001c; 2002a; 2002b; 2002c; 2003a; 2003b; 2004b;2004c; 2004d; 2005a; 2005b; 2005c; 2005d; 2005e; 2006a; 2006b; 2006c; 2007b; 2007d; 2007e; 2009a; 2009b; 2009c; 2009d; 2009e;2010b; 2010c; 2010d; 2010e; 2010f).

[2] See works referred to in note 1. For an overview of my work plus critical discussion of it by eleven scholars see McHenry (2009). See also www.nick-maxwell.demon.co.uk.

[3] To a considerable extent my work builds on and, I claim, substantially improves on, the work of Karl Popper: see Maxwell (1972; 1974; 2004a, ch. 3; 2002d; 2005b; 2005e;

2006b; 2006c; 2007d; 2010f). For a succinct summary of this influence, see the Preface to the second edition of Maxwell (1976a), or Maxwell (2009e). See also many references to Popper's work in Maxwell (1984a or 2007a). For Popper's own work, see Popper (1959; 1962; 1963; 1969; 1972; 1976).

[4] For a much more detailed exposition of knowledge-inquiry, or "the philosophy of knowledge", see Maxwell (1984a or 2007a, chapter 2). For evidence that knowledge-inquiry prevails in academia, see Maxwell (1984a or 2007a, chapter 6; 2000a). I do not claim that everything in academia accords with the edicts of knowledge-inquiry. My claim is, rather, that this is the only candidate for rational inquiry in the public arena; it is the dominant view, exercising an all-pervasive influence over academe. Work that does not conform to its edicts has to struggle to survive. But this may be about to change, as we shall see in section 9.

[5] For more details concerning this conception of rationality see Maxwell (1984a or 2007a, chs. 4 and 5).

[6] Much of Karl Popper's work is devoted to stressing the importance of the first two of these rules of rational problem-solving: see, for example, Popper (1963). Popper was too opposed to specialization, however, to give due weight to the importance of rule (3). He did not see that the evils of specialization could be counteracted by putting rule (4) into practice. For Popper's opposition to specialization see Maxwell (2010f).

[7] This assumption may be challenged. Does not academic inquiry seek knowledge for its own sake – it may be asked – whether it helps promote human welfare or not? In section 6 of the present paper, and elsewhere (Maxwell, 2007a, pp. 17-19, 70-5, 205-13) I argue that wisdom-inquiry does better justice than knowledge-inquiry to *both* aspects of inquiry, pure and applied. The basic aim of inquiry, according to wisdom-inquiry, is to help us realize what is of value in life, "realize" meaning both "apprehend" and "make real". "Realize" thus accommodates both aspects of inquiry, "pure" research or "knowledge pursued for its own sake" on the one hand, and technological or "mission-oriented" research on the other – both, ideally, seeking to contribute to what is of value in human life. Wisdom-inquiry, like sight, is there to help us find our way around. And like sight, wisdom-inquiry is of value to us in two ways: for its intrinsic value, and for practical purposes. The first is almost more precious than the second.

[8] Funds devoted, in the USA, UK and some other wealthy countries, to military research are especially disturbing: see Langley (2005) and Smith (2003).

[9] See Maxwell (1984a or 2007a, chapter 3) for a much more detailed discussion of the damaging social repercussions of knowledge-inquiry.

[10] The blunders of the *philosophes* are not entirely undetected. Karl Popper, in his first four works, makes substantial improvements to the traditional Enlightenment programme (although Popper does not himself present his work in this fashion). Popper first improves traditional conceptions of the progress-achieving methods of science (Popper, 1959). This conception, *falsificationism*, is then generalized to become *critical rationalism*. This is then applied to social, political and philosophical problems (Popper, 1961, 1962, 1963). The version of the Enlightenment programme about to be outlined here can be regarded as a radical improvement of Popper's version: see Maxwell (2004a, chapter 3). See also note 3.

[11] For a detailed development of this account of theoretical unity see Maxwell (1998, ch. 4; 2004a, appendix, section 2; 2007a, ch. 14, section 2. See also Maxwell (2004c; 2004d; 2010e; and 2010f).

[12] For much more detailed exposition of this argument that physics persistently accepts unified theories even though endlessly many empirically more successful disunified rivals are always available, this implying that physics accepts an unacknowledged metaphysical assumption to the effect that the universe itself has a unified dynamic

structure – i.e. is physically comprehensible – see Maxwell (1974; 1984a, ch. 9; 2007a, ch, 9 and 14; and especially 1998 and 2004a, chs. 1 and 2, and appendix). See also Maxwell (1993a; 1999; 2000b; 2002c; 2004b; 2005b; 2005e; 2006b; 2010a, ch. 5).

[13] Natural science has made such astonishing progress in improving knowledge and understanding of nature because it has put something like the hierarchical methodology of aim-oriented empiricism, indicated here, into scientific practice. Officially, however, scientists continue to hold the standard empiricist view that no untestable metaphysical theses concerning the comprehensibility and knowability of the universe are accepted as a part of scientific knowledge: see Maxwell (2004a, pp. 5-6, especially note 5, and 13-14, note 14). As I have argued elsewhere (Maxwell, 2004a, chapter 2; 2008), science would be even more successful, in a number of ways, if scientists adopted and explicitly implemented the hierarchical methodology indicated here.

[14] There are a number of ways of highlighting the inherently problematic character of the aim of creating civilization. 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, Berlin (1980, pp. 74-9). 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.

[15] A recent, remarkable exception is Penrose (2004).

[16] I might add that the aim-oriented empiricist conception of science indicated here does better justice to the scientific quest for understanding than does orthodox standard empiricist views: see Maxwell (1998, chapters 4 and 8; 2004a, chapter 2).

[17] This is the objection that most academics will wish to raise against the thesis of this essay. It will be made by all those who hold that academic inquiry quite properly seeks to make a contribution to human welfare by, first, acquiring knowledge and then, secondarily, applying it to help solve human problems.

[18] For a development of this point, see my (1984a, pp. 174-181, or 2007a, pp. 197-205).

[19] For further discussion see Maxwell (1984a, pp. 189-198, or 2007a, pp. 213-21).

[20] For literature protesting against the influence of scientific rationality in various contexts and ways, see for example: Berlin (1999); Laing (1965); Marcuse (1964); Roszak (1973); Berman (1981); Schwartz (1987); Feyerabend (1978; 1987); Appleyard (1992).

[21] See Maxwell (1984a, pp. 63-4, pp. 85-91 and pp. 117-118, or 2007a, pp. 75-7, 98-104 and 129-32) for further discussion of this issue. See also my (1976a, especially chs. 1 and 8-10).

22 Bloor (1976); Barnes and Bloor (1981); Latour (1987); Feyerabend (1978; 1987). These authors might protest that they do not deny scientific knowledge, method, progress or rationality as such, but deny, merely, that the sociology of knowledge can legitimately appeal to such things, or deny extravagant claims made on behalf of these things. See, however, the sparkling criticism by Sokal and Bricmont (1998, ch. 4).

23 See note 12.

24 Nicholas Rescher (personal communication); John Durant (1997).

25 See especially Maxwell (1984a or, better, 2007a). See also my (2010a, chs. 6 and 9).

26 See Maxwell (1984a, ch. 9, or 2007a, ch. 9 and 14; 1998; 2004a, chs. 1, 2 and appendix; 1993a; 2002c; 2004b; 2005b; 2005e; 2006b).

27 The problem of induction can be formulated as the problem of how physical theories can be verified empirically granted we only ever have a vanishingly small amount of evidence in support of them. (Solution: Maxwell, 2007a, pp. 400-30.) The problem of verisimilitude is the problem of what it means to say theoretical physics makes progress if it advances from one false theory to another. (Solution: Maxwell, 2007a, pp. 393-400 and 430-3.) The problem of simplicity is the problem of explicating what it means to say that a physical theory is simple, or unified, when any theory can be formulated in a variety of ways, some simple, many highly complex. (Solution: Maxwell, 1998, ch. 4; 2007a, pp. 373-86.)

28 See my (2004a, pp. 198-205).

29 See Maxwell (1972b; 1976b; 1982; 1988; 1993b; 1994; 1998, ch. 7; 2004e; 2010g).

30 Maxwell (2010h).

31 Maxwell (1985b; 2001, ch. 8).

32 Maxwell (1984a, pp. 174-81 and 269-75; 2001, ch. 7; 2010a, ch. 8).

33 Maxwell (1984a or 2007a, chs. 4, 5, 7 and 8; 2001a, ch. 3; 2004a, ch. 3 and 4; 2010a, chs. 6 and 9).

34 See, for example, Maxwell (2001a, pp. 3-6). Maxwell (2010a), especially, is intended to exemplify what I think philosophy ought to be: the attempt to clarify, and help solve, our most fundamental, urgent, general problems so that there are fruitful implications for diverse aspects of life. Indeed, all my books seek to do this. For too long, academic philosophy has been prevented from doing this, openly and clearly, by the lingering, crippling influence of "analytic philosophy" with its absurd idea that the basic task should be the analysis of concepts. This obscures rather than clarifies fundamental problems.

35 See Maxwell (1984a, pp. 171-189 and chapter 10, or 2007a, pp. 194-213 and chapter 10; and 2001a, chapters 5-7 and 9).

36 For wisdom-inquiry for five-year olds, see my (2005b).

37 For a sketch of wisdom-inquiry mathematics see my (2010h).

38 See especially my (1980 and 2010a). See, also, note 34.

39 For further discussion of changes that would need to be made for universities to implement wisdom-inquiry, see my (1984a or 2007a; 2004a; 2010a, especially ch. 9.

40 Mary Midgely, said of my *From Knowledge to Wisdom*, "a strong effort is needed if one is to stand back and clearly state the objections to the whole enormous tangle of misconceptions which surround the notion of science to-day. Maxwell has made that

effort in this powerful, profound and important book", Midgley (1986). Others who have published highly favourable comments on my work include: Leemon McHenry, George F. Kneller, Christopher Longuet-Higgins, J. J. C. Smart, Daniel Dennett, Alasdair MacIntyre, David Hodgson, Brian Easlea, John Hendry, Jerry Ravetz, Noretta Koertge, Cory F. Juhl, Anjan Chakravartty, Sherrilyn Roush, F.A. Muller, Niall Shanks, Clare McNiven and Margret Grebowicz: see www.nick-maxwell.demon.co.uk/Reviews.htm. Iredale (2007) discusses some work influenced by my ideas. See too Leemon (2009).

[41] See Iredale (2007) and Macdonald (2009) for developments of this point.

[42] For the fundamental importance of interconnecting work on broad and specialized problems, see my (1980).

[43] See www.cei.group.cam.ac.uk/ .

[44] http://www.ucl.ac.uk/grand-challenges/. I gather this grand challenges initiative has been influenced by my work.

[45] www.tyndall.ac.uk/general/about.shtml.

[46] Tyndall Centre, ed., *Truly Useful*, (UK, Tyndall Centre).

[47] UKERC (2009). www.ukerc.ac.uk/.

[48] Professor Paul Rogers, personal communication.

[49] For an account of the birth and growth of peace studies in universities see Rogers (2006).

[50] See Wilsdon Willis (2004).

[51] See www.knowledgetowisdom.org/.

[52] *London Review of Education* (2007). Special issue: Wisdom in the university. Vol. 5, no. 2 (June), subsequently republished as Barnett and Maxwell (2008).

[53] *Social Epistemology* (2007). Special issue: Wisdom in management. Vol. 21, no. 2 (April-June).

[54] See www.historyandpolicy.org/.