

What Philosophy Ought to Be

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Abstract

The proper task of philosophy is to keep alive awareness of what our most fundamental, important, urgent problems are, what our best attempts are at solving them and, if possible, what needs to be done to improve these attempts. Unfortunately, academic philosophy fails disastrously even to conceive of the task in these terms. It makes no attempt to ensure that universities tackle global problems - global intellectually, and global in the sense of concerning the future of the earth and humanity. Universities do not give sustained attention to global problems (due to specialization and giving priority to the pursuit of knowledge) and as a result violate three of the four most elementary rules of rational problem solving conceivable. Judged from the standpoint of helping humanity tackle global problems, universities as at present constituted betray reason and, as a result, betray humanity. Bereft of institutions of learning rationally designed to help us make progress towards as good and wise a world as possible, not surprisingly we fail to learn how to do it. This is the key crisis of our times. And it is, at root, a failure of *philosophy*. It is the failure of philosophy to keep alive rational exploration of global problems in universities, and in the public domain - a failure that can be traced back to the origins of modern philosophy in the 17th century. We urgently need a revolution in philosophy so that academic philosophers take up their proper task of promoting rational exploration of our fundamental, global problems.

1 What Philosophy Ought to Do

Philosophy is unique. There is no other academic discipline that has laboured for so long under such a massive misconception as to what its basic task ought to be.

The proper basic task of philosophy is to keep alive awareness of what our most fundamental, important, urgent problems are, what our best attempts are at solving them, and what the relative merits and demerits of these attempts are. A basic task is to articulate, and improve the articulation of, our fundamental problems, and make clear that there are answers to these problems implicit in much of what we do and think – implicit in science, politics, economic activity, art, the law, education and so on – these answers often being inadequate and having adverse consequences for life and thought in various ways as a result.

Philosophy should also try to help *improve* our attempted solutions to our fundamental problems, by imaginatively proposing and critically assessing possible solutions, all the time making clear, where relevant, that different possible solutions have different implications for diverse aspects of life. As a result of improving our attempted solutions to our fundamental problems we may thereby contribute to the improvement of our lives, and help us make progress towards a good world.ⁱ

Even though these are the proper, fundamental tasks for philosophy, it hardly needs to be said that none of these tasks can be said to be the exclusive domain of philosophy or academic philosophers. Quite the contrary, a central task of philosophy is to stimulate as many people as possible to think about fundamental problems imaginatively and critically - that is, *rationally*. Philosophy is not to be characterized, or delineated from other disciplines in terms of *who does it*, but rather in terms of *the fundamental character of the problems being tackled*, and perhaps *the value of the contribution in question*.ⁱⁱ

What, then, are our fundamental problems? Our most fundamental problem of all, encompassing all others, can be put quite simply like this:-

*How can our human world, and the world of sentient life more generally, imbued with the experiential, consciousness, free will, meaning and value, exist and best flourish embedded as it is in the physical universe?*ⁱⁱⁱ

Some will reject the idea that the ultimate reality behind the natural world is physical in character. For example, there are those who hold that the ultimate reality is God. In order not to exclude such views in an *a priori* fashion, as it were, we need a broader formulation of the above problem:

How can our human world ... exist and best flourish embedded as it is in the real world?

I interpret the first formulation of this problem in such a way that it encompasses all of academic thought, from theoretical physics, mathematics and cosmology, via the biological and technological sciences, to social inquiry and the humanities. It also encompasses all practical problems of living - problems facing individuals, groups, institutions, societies, nations, and humanity as a whole.^{iv}

The key idea of this conception of philosophy is that philosophy is concerned to help solve rationally our most *fundamental* problems. But what exactly does "fundamental" mean here?

We can perhaps say that problem P_1 is more fundamental than P_2 if solving P_1 also, at least in principle,^v solves P_2 , but not vice versa. This suffers from the disadvantage that " P_1 is more fundamental than P_2 " in this sense might just mean that P_1 is more general. Can we distinguish "more fundamental" from "more general" - the former being stronger? It can be done like this. P_1 is more fundamental than P_2 if the solution to P_1 solves P_2 , but not vice versa, and the solution to P_1 is unified or coherent in some significant, substantial sense of these terms, and not just a jumble of disconnected items. An example of a unified or coherent solution is a unified physical theory that solves a range of problems in physics.^{vi}

Granted this conception of the basic task of philosophy, it at once becomes clear that philosophy in the university has, as an elementary obligation, to ensure that sustained thinking about our fundamental problems and how to solve them goes on in an influential way within academic inquiry. This is, indeed, a basic requirement for academic inquiry to be rational. Four elementary, almost banal, rules of reason are:

- (1) Articulate, and seek to improve the articulation of, the basic problem to be solved.
- (2) Propose and critically assess possible solutions.
- (3) If the basic problem to be solved proves intractable, specialize. Break the basic problem up into subordinate problems. Tackle analogous, easier-to-solve problems, in an attempt to work gradually to the solution to the basic problem to be solved.
- (4) But if one engages in specialized problem-solving in this way, make sure that specialized and basic problem-solving interact, so that each influences the other (since otherwise specialized problem-solving is likely to become unrelated to the basic problems we seek to solve).

Sustained thinking about what we may call "global" problems - global intellectually, and global in the sense of encompassing the earth and humanity as a whole - must go on in universities in a way that influences, and is influenced by, more specialized research if rules (1), (2) and (4) are to be put into practice, and academic inquiry is to meet elementary requirements for rationality. Philosophy as sustained thinking about our fundamental problems and how to solve them must be an integral, influential part of academia if academia as a whole is to be rational. A quite basic task for philosophy, then, is to ensure, as a bare

minimum, that universities are organized in such a way that each university has a big, prestigious Seminar or Symposium, open to all at the university from undergraduate to vice-chancellor, which meets regularly to explore global problems in a sustained way, and in a way that is capable of influencing, and being influenced by, more specialized research.

From what I have said so far, one would expect such global seminars to be commonplace in universities around the world.

I know of no university anywhere that has such a global seminar.^{vii}

Academic philosophy has failed dismally to create such a global seminar in the university. Even worse, it has made no attempt to do so. Worse still, academic philosophy has failed almost entirely to take on the task I have indicated above - the task of keeping alive awareness of what our most fundamental problems are (as a bare minimum).

Academic philosophy today does not even recognize, as a fundamental problem of the discipline: *What kind of inquiry can best help us realize what is of value in life?* or, to quote the title of an article of mine *What kind of inquiry can best help us create a good world?* (Maxwell, 1992).

2 A Fundamental Failure of Philosophy

Academic philosophy does discuss some technical, conceptual puzzles associated with the fundamental problem I have indicated above. There is discussion of puzzles associated with the mind/body problem, free will and determinism, the question of whether physical theory can be interpreted "realistically" as postulating unobservable physical entities such as electrons and quarks, and discussion of some related conceptual issues having to do with such things as knowledge, perception, reason, action, the good, justice, what is of value. But the basic tasks for philosophy that I have indicated above are just not done.^{viii}

The consequences of this abysmal failure of academic philosophy to do what it most needs to do are dire indeed. The outcome is that academia as a whole fails both reason and humanity. The failure of academic inquiry to give an important role to the sustained exploration of global problems within the university means that academia violates three of the four most elementary rules of reason that one can think of - rules (1), (2) and (4). Rule (3) is of course put splendidly into effect in all our universities. Disciplines splintering again and again and again into ever more specialized subordinate disciplines is one of the most striking features of the university today.^{ix} But the failure to tackle fundamental problems in a sustained and influential way means that rules (1) and (2) are violated, which in turn means that rule (4) is violated as well.^x

This wholesale, structural breakdown of rationality is no mere formal matter. It has dire consequences for humanity. This long-standing structural irrationality of academia is in part responsible for the genesis of our current global problems, and our incapacity to resolve them effectively and wisely. People die as a result.

Consider some of the most serious global problems that face humanity today: rapid growth in the world's population, the lethal character of modern war and terrorism, immense differences in wealth and power around the globe, destruction of natural habitats and rapid extinction of species, pollution of earth, sea and air - and, grimmest of all, perhaps, the impending disasters of climate change.

What would resolve these problems in such a way that the outcome is a more peaceful, just, equitable, democratic, sustainable world - a world in which we all have good chances of leading lives of value? Certainly relevant scientific knowledge, understanding and technological know-how are essential. But these problems would be resolved fundamentally, not by knowledge or technological know-how, but by appropriate *actions*. It is what we do, or refrain from doing, not what we know, that enables us to realize what is of value in life (except when knowledge is of value in itself). Even when scientific knowledge and

technological know-how are relevant, as they are in medicine or agriculture for example, it is always what this knowledge enables us to *do* that leads to the achievement of what is of value, not the knowledge in itself.

Thus, in order to solve our global problems we need to discover how to *do* what needs to be done to resolve them. We need, fundamentally, to discover how so to act, to live, that we tackle our global problems in increasingly effective, intelligent and humane ways.

We need to *learn* how to do it. We need to *learn* how to develop and implement new political programmes, new policies, new economic strategies, new ways of living. We need to improve our institutions, our trading relations, our laws and customs, our politics, our media, the content of our communications. Above all, I would suggest, we need to learn how to tackle our global problems in increasingly cooperatively rational ways.

We are confronted, then, by an immense task of learning, and that, in turn, means that it is vitally important that our *institutions of learning* - our universities and schools - are properly organized, structured and devoted to helping us learn what we need to learn. Our universities need to be organized and devoted, fundamentally, to helping us learn how so to act, to live, that we progressively resolve our conflicts and problems of living, including our global problems, in such ways that, with increasing success, we come to realize what is genuinely of value in life.

In short, granted that the basic aim of academia is to help promote human welfare, help people realize what is of value in life, the problems that need to be tackled are, fundamentally, problems of living, problems of action in the real world and not, primarily, problems of knowledge. A basic academic task must be to promote cooperatively rational tackling of problems of living in the great social world beyond the confines of the university. Universities cannot of course decide for the rest of us what our problems of living are and what we need to do about them. Their job is to propose, to argue, to critically assess, to promote awareness of what our problems may be, and what may be our options. And to learn from, and spread awareness of, good solutions in practice wherever they are to be found in the community. One might think of universities as a kind of people's civil service doing openly for the public what actual civil services are supposed to do, in secret, for governments. Universities need just sufficient power to retain their independence from government, industry, the media, the military, public opinion, but no more.

A kind of academic inquiry well-designed to help promote human welfare, in short, must, as a matter of absolute intellectual priority (1) articulate problems of living (including global problems), and (2) propose and critically assess possible solutions - possible actions, policies, political programmes, economic strategies, ways of life. It must also, of course, (3) engage in specialized scientific and technological problem solving, but must, at the same time (4) ensure that fundamental and specialized problem solving influence each other, so that fundamental problem solving is informed of the results of specialized research, and specialized research retains its relevance to our fundamental problems of living.

If universities were designed in this way around the world, there might be some hope that we would gradually learn how to resolve our grave global conflicts and problems in increasingly cooperatively rational ways, thus gradually making progress towards a better, wiser world. But universities are not remotely designed or organized in this vitally necessary way. From the past we have inherited the idea that academia must devote itself, in the first instance at least, to the pursuit of knowledge. First, knowledge is to be acquired; then, in a secondary way, it can be applied to help solve social problems. The vitally necessary task of tackling problems of living imaginatively and critically is excluded from the intellectual domain of inquiry, or pushed to the periphery and marginalized. What universities most need to do to help humanity learn how to make progress towards as good a world as possible is not

done at all, or is only done in a severely restricted fashion, and certainly not as the central, primary concern.

This is a failure of philosophy. It is the failure of philosophy to establish that universities need to give sustained attention to fundamental problems in order to meet elementary requirements of rationality, and in order to serve the best interests of humanity. It is the failure of philosophy even to conceive of the need to do this.

The outcome of this failure is that, instead of helping to solve global problems, universities have, if anything, actually helped to create and intensify these problems.

It is all too rarely appreciated that modern scientific knowledge and technological know-how have made all our current global problems possible. Much of great benefit has of course come from science and technology. They have made the modern world possible. But in making possible modern industry and agriculture, modern medicine and hygiene, modern transport and armaments, they also made possible all the global problems indicated above: the explosive growth in the world's population, vast inequalities in wealth and power around the world, the lethal character of modern war, climate change and the rest.

There is a sense, indeed, in which science and technology may be said to be the *cause* of these things. It will be said at once that it is not *science* that is the cause of these global problems but rather the things that we *do*, made possible by science and technology. This is obviously correct. But it is also correct to say that scientific and technological progress *is* the cause. The meaning of "cause" is ambiguous. By "the cause" of event E we may mean something like "the most obvious observable events preceding E that figure in the common sense explanation for the occurrence of E". In this sense, human actions (made possible by science) are the cause of such things as people being killed in war, destruction of tropical rain forests. On the other hand, by the "cause" of E we may mean "that prior change in the environment of E which led to the occurrence of E, and without which E would not have occurred". If we put the 20th century into the context of human history, then it is entirely correct to say that, in this sense, scientific-and-technological progress is the cause of our distinctive current global disasters: what has changed, what is new, is scientific knowledge, not human nature. Give a group of chimpanzees rifles and teach them how to use them and in one sense, of course, the cause of the subsequent demise of the group would be the actions of the chimpanzees. But in another obvious sense, the cause would be the sudden availability and use of rifles – the new, lethal technology. Yet again, from the standpoint of theoretical physics, "the cause" of E might be interpreted to mean something like "the physical state of affairs prior to E, throughout a sufficiently large spatial region surrounding the place where E occurs". In this third sense, the sun continuing to shine is as much a part of the cause of war and pollution as human action or human science and technology.

In short, if by the cause of an event we mean that prior change which led to that event occurring, then it is the advent of modern science and technology that has caused all our current global crises. It is not that people became greedier or more wicked in the 19th and 20th centuries; nor is it that the new economic system of capitalism is responsible, as some historians and economists would have us believe. The crucial factor is the creation and immense success of modern science and technology.

Many blame science for our problems. But that misses the point. It is not science that is at fault, but rather science *dissociated from a more fundamental concern with our problems of living and what to do about them*. The fault lies with our failure to develop a kind of inquiry, sketched above, rationally designed and devoted to helping us learn how to solve our problems of living, realize what is of value to us in life. The fault lies, not with science, but with philosophy.^{x1}

3 How Philosophy Came to Fail so Drastically

How and why did philosophy come to fail so drastically? Once upon a time, it is clear, philosophy had no inhibitions at all about tackling fundamental problems. What kind of universe is this? How did we come to be? What is of most value in life? What kind of social world should we strive to create? The ancient Greek philosophers tackled these fundamental problems in stark, bold terms: this is the case, for example, of Thales, Anaximander, Heraclitus, Democrates, Socrates, Plato, Aristotle. Early modern philosophers did this too: Descartes, Leibniz, Locke, Hobbes, Spinoza, Kant. We need to remember, indeed, that modern science began as an extraordinarily successful outgrowth of philosophy. The creators of modern science, Kepler, Galileo, Hooke, Boyle, Huygens, Newton and their contemporaries all thought of themselves as engaged in philosophy - in natural or experimental philosophy. And the basic task of natural philosophy was to improve our answers to the fundamental philosophical problem: What kind of universe is this? Kepler, Galileo, Descartes, Boyle, Huygens, Leibniz and other natural philosophers of the time did not hesitate to put forward their conjectures about the nature of the universe along with proposed laws and theories about more specific phenomena such as terrestrial and astronomical motion, sunspots, the tides, light, gases, and so on.

What happened? What caused philosophy to abandon tackling fundamental problems?

It all goes back to the triumph of Newtonian physics and, in particular, associated with this, the triumph of Newton's conception of scientific method.

In his *Principia*, Newton claimed to derive his law of gravitation from the phenomena by induction without framing hypotheses. He claims to do this as follows. First, from his three basic laws of motion, Newton proves mathematically a great number of theorems which concern, amongst other matters, bodies that move along elliptical and parabolic paths, and bodies that move under the influence of a force directed towards a fixed centre. He proves, for example, that a body in motion under the influence of a force directed towards a fixed centre that varies inversely as the square of the distance will travel along an elliptical path. Newton then formulates four "rules of reasoning in philosophy". These specify, in somewhat different ways, how universal laws may be arrived at by induction from observed regularities, without resort to metaphysical or philosophical hypotheses. Newton then formulates six phenomena, six astronomical regularities. These concern the manner in which the moons of Jupiter, Saturn and Earth in their motions around their respective planets, and the motions of the six inner planets in their motions around the sun, observe Kepler's laws of planetary motion. From these phenomena, Newton then goes on to derive by induction his universal law of gravitation, invoking during the course of this inductive derivation his mathematical theorems, and his four rules of reasoning.^{xii}

For some years after the publication of Newton's *Principia* in 1686, natural philosophers fell into two camps. On the one hand those in England supported Newton, while those on the Continent, by and large, supported Descartes. As Voltaire put it decades later in his *Lettres Philosophiques*:

A Frenchman arriving in London finds things very different, in natural science as in everything else. He has left the world full, he finds it empty. In Paris they see the universe as composed of vortices of subtle matter, in London they see nothing of the kind. .. For your Cartesians everything is moved by an impulsion you don't really understand, for Mr. Newton it is by gravitation, the cause of which is hardly better known.^{xiii}

The astonishing predictive and explanatory success of Newtonian theory, together no doubt with his claim to have derived his universal law of gravitation from the phenomena by

induction without appealing to metaphysical hypotheses, led eventually to the downfall of Cartesian physics and cosmology, and the triumph of Newton. And along with the victory of Newtonian physics came the victory of Newtonian methodology. Descartes' somewhat rationalistic, a priori methods of "clear and distinct ideas" fell into disfavour. Instead, after the immense success of Newtonian physics, natural philosophers had, it seemed, for the first time in history, a clear way forward. What one had to do in order to acquire reliable knowledge of nature was to put Newton's rules of reasoning into practice. First, discover regularities in the natural world by means of observation and experiment. Then, apply Newton's rules of induction to arrive at universal laws and theories. Philosophical and metaphysical speculation no longer had any role whatsoever in natural philosophy - or in "natural science" as it came subsequently to be called. Scientists could ignore philosophy, and exploit Newton's extraordinarily successful empirical methods. Thus gradually after Newton, natural philosophy was reborn as science.^{xiv}

A gulf opened up between science and philosophy. Scientists came to feel that they could safely ignore philosophy, as irrelevant to the task of improving scientific knowledge of the natural world by means of the established methods of natural science bequeathed to them by Newton. And philosophy for its part participated in the creation of this gulf by failing to produce anything of interest or of use to the new science. This failure stemmed from a more basic failure to solve fundamental problems thrown up by the new natural philosophy, and the new science. As a result, philosophy became more and more remote from science. The natural philosophy of Galileo, Kepler, Descartes, and even Newton, broke up into natural science on the one hand, philosophy on the other.^{xv} So vast and decisive is this gulf that, in a wholly anachronistic way, it is today projected back into the past, so that nowadays we divide up 16th and 17th century natural philosophers, quite artificially, into two camps: the scientists (Kepler, Galileo, Huygens, Newton), and the philosophers (Descartes, Locke, Leibniz, Hobbes, Spinoza). They would not have seen themselves in this fashion. They would have held themselves to have been natural philosophers without exception.

Philosophy failed to solve two absolutely fundamental problems created by the new natural science, namely:-

1. How is it possible for science to establish universal laws and theories by means of inductive inference from evidence?
2. If the universe really is more or less as modern science seems to tell us it is, how can our human world exist, imbued as it seems to be with colours, sounds, smells, tactile qualities as we experience them, and with consciousness, free will, meaning and value? If the universe is, in the end, more or less as depicted by physics, does not that mean that the world as we experience it is almost entirely an illusion?

It is the failure of modern philosophy to solve these two fundamental problems that accounts for its progressive alienation from its basic task: to keep alive awareness of our fundamental problems. I take these two problems in turn in the next two sections.

4 The Problem of Induction

Problem 1 arises because, however much evidence there is in support of a physical theory, Newtonian theory let us say, or quantum theory - however severely tested the theory may be - endlessly many rival theories can be concocted which fit all the available evidence just as well as the given theory. We can concoct endlessly many such rivals by modifying the given theory in wholly ad hoc ways so that each new theory differs from the initial theory only for some as yet unobserved phenomenon - for example, some phenomenon that lies in the future.^{xvi} The problem was formulated in a particularly striking way by David Hume.^{xvii} It led Immanuel Kant to ask "How is science possible?"^{xviii} Ever since, philosophers have struggled to answer Kant's question, and have failed.^{xix} Nothing could highlight more

dramatically the difference between science and philosophy. Whereas science goes from strength to strength, philosophy goes backwards. It is reduced to trying to work out how any theoretical knowledge in science can be achieved at all. Far from contributing to the success of science, for philosophy it is this very success that poses the problem. Philosophy has, it seems, nothing fruitful or helpful to contribute to science at all. And this tends to be the opinion of scientists themselves. Some years ago John Ziman, a physicist, wrote "the Philosophy of Science ...[is] arid and repulsive. To read the latest symposium volume on this topic is to be reminded of the Talmud, or of the theological disputes of Byzantium".^{xx} More recently Steven Weinberg declared: "From time to time ... I have tried to read current work on the philosophy of science. Some of it I found to be written in a jargon so impenetrable that I can only think that it is aimed at impressing those who confound obscurity with profundity. ... only rarely did it seem to me to have anything to do with the work of science as I knew it. ... I am not alone in this; I know of *no one* who has participated actively in the advance of physics in the post-war period whose research has been significantly helped by the work of philosophers".^{xxi} Recently, Stephen Hawking pronounced that "philosophy is dead".^{xxii} Given the apparent impotence of philosophy to be of any help to science, these comments are hardly surprising.

As it happens, the problem of induction has been solved, and a philosophy of science has been put forward that would, if put into scientific practice, be genuinely fruitful for science.^{xxiii} By and large, this solution has been overlooked, by both philosophers and scientists.^{xxiv}

In order to solve the problem of induction, we need first to follow Karl Popper, and acknowledge scientific theories cannot be verified empirically; they can only be falsified.^{xxv} We then need to appreciate that theories in physics have to satisfy *two* requirements to be accepted. They must be sufficiently empirically successful; and they must be sufficiently *unified* (that is, they must postulate near enough *the same* laws for the range of phenomena to which the theory applies).^{xxvi} We then need to appreciate that persistent acceptance of (more or less) *unified* theories even though endlessly many empirically more successful disunified rivals can easily be concocted means that physics makes a big, metaphysical assumption about the universe: there is some kind of underlying dynamic unity in nature.^{xxvii} Then it needs to be appreciated that this assumption, because of its substantial, influential and highly problematic character, needs to be represented in the form of a hierarchy of assumptions (and associated methods), assumptions becoming less and less substantial, and more nearly such that they must be true for science, or the pursuit of knowledge, to be possible at all. At each level in the hierarchy, that assumption is adopted which best accords with the assumption above, and leads to the most empirically progressive research programme, or offers the best promise of leading to such a programme. Assumptions are subjected to sustained criticism, alternatives being developed and assessed, in an attempt to improve the assumptions that are adopted, criticism being concentrated where it is likely to be most fruitful, near the bottom of the hierarchy. This *aim-oriented empiricist* conception of physics (as I have called it) enables us to improve assumptions and methods - aims and methods - as scientific knowledge and understanding improve. There is something like positive feedback between improving scientific knowledge, and improving assumptions and methods, improving knowledge about how to improve knowledge - the nub of scientific rationality, according to this view.^{xxviii}

Not only does aim-oriented empiricism solve the problem of induction. Putting it explicitly into practice would have fruitful implications for science.^{xxix} The centuries long scientific poverty of philosophy comes to an end. In making explicit implicit metaphysical assumptions of physics, and in providing a framework of relatively unproblematic, fixed assumptions (high up in the hierarchy), aim-oriented empiricism provides a framework for the *improvement* of more substantial and problematic metaphysical assumptions, lower down

in the hierarchy.^{xxx} Aim-oriented empiricism provides physics with a rational, if fallible and non-mechanical method for the discovery of revolutionary new theories.^{xxx1} And aim-oriented empiricism clarifies what it means to say of a physical theory that it is *unified*, and provides a partial ordering of theories with respect to degrees of unity.^{xxxii} Furthermore, aim-oriented empiricism has implications throughout natural science, and not just for theoretical physics.^{xxxiii}

Aim-oriented empiricism transforms science, philosophy, and the relationship between the two.^{xxxiv} Philosophy of science, in so far as it is about what are, and ought to be, the aims and methods of science, becomes an integral part of science itself, within the framework of aim-oriented empiricism.^{xxxv} And science, in a sense, ceases to be science and becomes much more like natural philosophy as it was in the time of Newton. Metaphysics, methodology, epistemology, philosophy all become a vital, integral part of science itself, as in Newton's time. The great divide between science and philosophy, inherited from Newton, is no more - or would be no more, if aim-oriented empiricism were to be adopted.^{xxxvi}

But as long as the untenable, orthodox view is taken for granted that evidence alone determines what is accepted in science, philosophy will continue to be largely irrelevant to science. The chances are that philosophers of science will continue to ask despairingly the Kantian question "How is scientific knowledge possible?", and will not contribute to attempts to solve the fundamental problems tackled by science, and created by our scientific knowledge and understanding.

One day, perhaps, scientists may come to look favourably on aim-oriented empiricism. Even philosophers may eventually take note of the view. Then natural philosophy might be recreated, and academic philosophy might again begin to take up its proper tasks.

5 The Human World/Physical Universe Problem

Associated with the birth of what we now call modern science (but was then called natural philosophy), there was a revolution in philosophy. Aristotelianism was rejected, and atomism was adopted instead. But atomism creates a profound problem concerning the existence and value of the human world. If the universe really is made up solely of atoms that interact in accordance with precise laws, and are bereft of all experiential qualities such as colours, sounds and smells, how can the world exist as we experience it, full of colours, sounds and smells? How can our inner experiences exist, our thoughts and feelings, our states of consciousness? How can we be responsible for our actions - how can we have free will? How can human life have any meaning or value?

Atomism as adopted by Galileo (1564-1642), Descartes (1596-1650) or Huygens (1629-1695) is very different from the view of the universe adopted by physicists today. But the dramatic changes in our conception of the physical universe that have come about since the 17th century have not in themselves had much impact on the problem just indicated - *the human world/physical universe problem* (HW/PhU problem) as it may be called. What is common to our view of the universe today and the atomism of the 17th century, a doctrine that may be called *physicalism*, can be put like this: the universe is made up solely of one kind of physical entity (perhaps one entity), that interacts in accordance with precise (perhaps probabilistic) physical law. (Aim-oriented empiricism tells us that the basic physical entity, some kind of physical field pervading all of space and time, interacts with itself in accordance with a unified pattern of physical law.) It is physicalism that poses the human world/physical universe problem.

This problem posed by science, posed by the metaphysical view of the universe associated with modern science, is a *philosophical* problem - indeed *the* philosophical problem *par excellence*, as I proposed at the beginning of this essay. And it has, in a way, been central to philosophy since Galileo and Descartes. But attempts at solving the problem over the

centuries have been disastrous failures. And it is this long-standing failure that has led much of philosophy to become remote from science, to become alienated from its basic problems and tasks, and to become lost in esoteric trivialities. The degeneration of philosophy has been the outcome.

An early and famous attempt at the solution is due to Descartes.^{xxxvii} Cartesian dualism divides reality into two realms: the physical universe; and the world of minds. Physicalism is correct about the material world. Everything that physics leaves out, the sensory qualities we experience, are to be scooped up from the world around us and tucked into our minds. Minds are associated with, distinct from, but in interaction with, living brains of persons.

Cartesian dualism is a brilliant attempt at the solution to the HW/PhU problem. But it faces lethal problems. There is the problem of the wild implausibility of these mysterious entities, conscious minds, somehow being associated with physical processes going on in our brains, but utterly distinct from them. There is the problem of the *interaction* between brain and mind. Mind must interact with brain if we are to have free will, but such an interaction would mean that physical processes occur in our brains which cannot even in principle be explained physically. Cartesian dualism must postulate persistent, minute, poltergeist events in the brain. Physicalism is violated. But by far the most serious problem confronting Cartesian dualism is that it implies (or seems to imply) that it is impossible for us to acquire any knowledge of the physical world around us. The world we experience, what we see, hear, touch, taste, smell, does not exist. It is all in the mind. How then can we experience any aspect of the physical world? We are locked inside our minds. And physics, applied to the processes of perception, seems to confirm this. Light enters our eyes, which causes physical processes to travel up our optic nerve to our brain, and then we have the experience of seeing, a mental event remote from, and utterly different from, its external cause in the physical world.

Given that Cartesian dualism faces these horrendous problems, the sensible, rational thing to do would be to reject the doctrine, return to the original problem that it sought to solve, the HW/PhU problem, and think again. If that had occurred, academic philosophy might not be in the dire state that it is in today. But that is not what occurred. Instead, something far more paradoxical took place. Many, perhaps most, subsequent philosophers did reject Cartesian dualism. But they accepted many implications of Cartesian dualism. They struggled to solve problems bequeathed to them by Cartesian dualism. And as a result, philosophy became more and more removed from, and irrelevant to the problems posed by, science. What philosophy after Descartes singularly failed to do was to return to the fundamental problem Descartes tried, and failed, to solve: the HW/PhU problem. Even worse, philosophical doctrines came to prevail which, once accepted, made it impossible even to articulate the HW/PhU problem.

Descartes led to Locke (1632-1704). Locke, ostensibly much more of an empiricist than Descartes, held that all our ideas stem from sense impressions, and was more doubtful than Descartes about the nature of physical entities, and our capacity to acquire knowledge about them. But essentially, Locke accepted Descartes' dualism.^{xxxviii} Locke led to Berkeley (1685-1753). Berkeley pointed out that if all we ever experience is our inner sensations, then we can never perceive external objects, and we can have no reason whatsoever to suppose that they exist. We can have no knowledge whatsoever of the material world. The physical universe disappears. All that science is about vanishes. To be is to be perceived. There is only the world of mind, of immediate sensation and experience.^{xxxix} Berkeley led to Hume (1711-1776). Hume pointed out that, if all our ideas stem from our sense impressions, then any idea which cannot be traced back to sense impressions cannot be meaningful. It cannot be an idea at all. But ideas about things external to us, the material universe, and what causes one state of affairs necessarily to result in another, all belong to this category of

meaninglessness. We cannot even have meaningful ideas about a physical universe of which we can have no direct experience. Science interpreted to be about the material world is not just impossible. It is meaningless.^{xi}

Hume led to Kant (1724-1804). And Kant endorsed and intensified Hume's ferociously sceptical attitudes towards the material world, the entire domain of natural science. Kant thought that the material world - or the *noumenal* world as he called it - does exist, but he held firmly that nothing whatsoever can be said about it, except that it exists. The subject of science, insofar as it is the material world, has been removed entirely from human reach.^{xii}

Kant is a paradoxical character. He took science very seriously, and even contributed to it.^{xiii} Nevertheless, according to Kant, science is about the phenomenal world, the world of experience, not the real world, the material world, which is, for Kant, unknowable.

The outcome of this progression in philosophy, from Locke to Kant, is that the fundamental problem of philosophy, the HW/PhU problem, cannot be formulated. That which sets the problem, the physical universe, has been intellectually annihilated, or at least cast into the realm of the utterly unknowable. Instead of Cartesian dualism and its implications being firmly rejected, the implication concerning the impossibility of knowing anything about the physical world by means of experience is firmly adopted, and as a result it becomes impossible even to formulate the HW/PhU problem.

Kant's philosophy, famous for its obscurity, led to a great upsurge of obscure work in metaphysics, often idealist, anti-rationalist, and indifferent to, if not hostile towards, natural science. Kant led on, unwittingly, to Fichte (1762-1814), Schelling (1775-1854), Schleiermacher (1768-1834), Hegel (1770-1831), Schopenhauer (1788-1860), Husserl (1859-1938) and Heidegger (1889-1976). Bombastic metaphysics became all the rage, spreading even to Britain with the work of T. H. Green (1836-1882), F. H. Bradley (1846-1924) and J. McTaggart (1866-1925), and to France with existentialism and the work of Sartre (1905-1980) and Merleau-Ponty (1908-1961). The anti-scientific and idealist character of this body of post-Kantian work again made it impossible even to formulate the basic problem of philosophy, the HW/PhU problem.

Inevitably, a reaction set in. G. E. Moore (1873-1958) did much to initiate it by criticizing some of the outlandish assertions of the metaphysicians in the name of common sense.^{xliii} Bertrand Russell (1872-1970) along with his one-time student Ludwig von Wittgenstein (1889-1951) contributed to the reaction by emphasizing that the world is made up of *facts*. They propounded a doctrine called *Logical Atomism*. There is an element of irony in this being a part of a movement against metaphysics in that the doctrine has itself a distinctly metaphysical air about it, especially in the hands of Wittgenstein. Logical Atomism holds that the world is made up of *atomic facts* - facts that are logically independent of one another.^{xliv} One problem this doctrine faced was that no one could come up with a single convincing example of an atomic fact. There are good grounds for holding that there are none - as a glance at Maxwell (1968a) might convince one. Facts in the real world tend to be logically related to one another. This is especially true of facts about the physical universe.

Russell also contributed to the anti-metaphysical movement by helping to establish the view that the proper job of philosophy is *analysis* - logical, philosophical or conceptual. And Russell produced what was later taken to be a paradigmatic case of philosophical analysis. This holds that "The King of France is bald" is to be analysed to assert "There is a man who is at present King of France; there is only one such man; and he is bald".^{xlv}

Vienna in the 1930s then spawned a movement dedicated to the celebration of science and the annihilation of metaphysics once and for all. This movement is called *Logical Positivism*, and its members included Moritz Schlick (1882-1936), Rudolf Carnap (1891-1970), Carl Hempel (1905-1997), Otto Neurath (1882-1945), Hans Reichenbach (1891-1953), Friedrich Waismann (1896-1959), Herbert Feigl (1902-1988) and Philipp Frank (188-1966).

Wittgenstein was a sort of aloof figurehead. According to Logical Positivism, the meaning of a proposition is given by the method of its verification. All meaningful propositions fall into two classes, empirical and analytic. Empirical propositions are verified by an appeal to evidence, analytic ones by an appeal to the meaning of constituent terms, as when we convince ourselves that "All bachelors are unmarried" is true in virtue of the meaning of "bachelor" and "unmarried". Analytic propositions can be established with certainty but assert nothing about the world. Only propositions verified empirically make assertions about the world.

Metaphysical propositions, however, are put forward as being about the world that have been proved by reason alone. But this is not possible. Such propositions are neither empirical nor analytic. Hence they are all meaningless.^{xlvi}

Logical Positivism faced the dreadful problem, however, that scientific laws and theories cannot be conclusively verified either, and thus are all meaningless too. The Logical Positivists struggled to formulate a version of the verification principle that included as meaningful only that which they wanted to regard as meaningful, and excluded everything else, but they failed.

It might seem that this anti-metaphysical movement, initiated by Moore and Russell and developed by the Logical Positivists, would be better able to give centre stage to the HW/PhU problem, in view especially of the central role given to science. But this did not happen, for several reasons. The analytic view of philosophy rendered the HW/PhU problem - a problem concerning the real world - beyond the scope of philosophy. In order to formulate the HW/PhU problem one needs to appeal to metaphysics, the metaphysics of physics, namely physicalism; but Logical Positivism held metaphysics to be meaningless. Again, the central doctrine of Logical Positivism - the verification principle - led to the view that factual scientific statements are about actual and possible sense data; but this amounts to a form of idealism, to the denial of the existence of the physical universe independent of human experience. Once again, the HW/PhU problem cannot even be formulated because the physical universe, that which poses the problem, is removed from view.

Logical Positivism had an immense impact on much subsequent philosophy, especially in the English speaking world, long after its demise. Somewhat like Cartesian dualism, implications of the doctrine continued to be influential even though the doctrine itself had been rejected. It lent support to the view that philosophy could not be about real problems in the real world - since philosophy is not empirical - and must therefore confine itself to *analysis*, and to producing analytic propositions, as mathematics and logic do.

After the second world war it was clear that philosophy had split into two mutually hostile camps. On the one hand there is continental philosophy, stemming from the idealist metaphysicians indicated above, against or indifferent to natural science, anti-rationalist, often obscure to the point of incoherence, and including such doctrines as phenomenology, existentialism, critical theory, structuralism, post-structuralism and post-modernism. On the other hand there is analytic philosophy, stemming from Moore, Russell, Logical Positivism and Wittgenstein, committed to the idea that the task of philosophy is analysis, lucid about not very much.

Analytic philosophy has never recovered from the disastrous idea that the proper basic task of philosophy is to analyse concepts. This is a recipe for intellectual sterility at best, intellectual dishonesty at worst.^{xlvii} Built into the meaning of the kind of words philosophers are interested in - mind, knowledge, consciousness, justice, freedom, explanation, reason, and so on - there are various kinds of often highly problematic *assumptions*, factual, theoretical, metaphysical, evaluative. Instead of imaginatively articulating and critically assessing such assumptions directly, philosophical analysis seeks to arrive at definitive meanings for these concepts as if this can be done in a way which is free of problematic

factual and evaluative doctrines. This is a recipe for sterility and dishonesty for, in arriving at such definitive meanings, problematic factual and evaluative doctrines are implicitly decided, but without explicit discussion of these doctrines, and without consideration and critical assessment of alternatives. The whole process is, in other words, profoundly irrational. The classic example of all this is Gilbert Ryle's *Concept of Mind*, which claims merely to analyse the meaning of mental concepts but which thereby, implicitly, espouses behaviourism even though this is explicitly denied.^{xlviii}

It may be objected that analytic philosophy has long moved on from this Rylean conception of its task, and no longer confines itself to conceptual analysis. Maybe so; nevertheless, contemporary philosophy has not repudiated fully its analytic past, and is still crippled by it. As a result, it still engages in "puzzle solving", and fails lamentably to take up its proper task.^{xlix}

Neither wing of philosophy has been able to give centre stage to the HW/PhU problem, let alone the more general version of this problem formulated near the beginning of this essay. Neither wing takes its basic task to be to keep alive awareness of what our most fundamental problems are, what our best attempts are at solving them, and what the relative merits and demerits of these attempts are. Neither wing shows even a glimmering of an awareness that this is what philosophy ought to do. Neither wing makes any attempt whatsoever to get schools and universities to grapple, imaginatively and critically, with fundamental problems in a sustained way, and in a way which interacts with more specialized problem solving. I know of no academic philosophers who strive actively to pursue philosophy in such a way, or even conceive of philosophy such a manner.

Perhaps I overstate things a bit here. Certainly Karl Popper did just what I have said a philosopher should do, and thereby made immensely significant contributions to thought, especially in his first four books.ⁱ Bertrand Russell tackled fundamental problems, especially in some of his later, more popular books. J. J. C. Smart, Thomas Nagel, Daniel Dennett, Peter Singer, David Chalmers and Tim Maudlin have also sought to contribute to thought about fundamental problems.ⁱⁱ But even here, what is lacking is any awareness of the urgent need to transform academia so that it comes to tackle global problems - global intellectually, and global in the sense of being about the welfare of the planet and humanity - in a lively, imaginative and critical way, and in a way which both influences and is influenced by specialized problem solving, so that all four elementary rules of reason may be implemented instead of just one.ⁱⁱⁱ My forty-year long effort to get this message across to my fellow philosophers has been met with indifference and silence.^{liii}

Over the centuries, academic philosophy has lost its way. What began so promisingly with René Descartes in the 17th century has dwindled either into anti-rationalist, anti-scientific metaphysical nonsense, or into sterile analytic puzzle-solving, as far as the mainstreams of philosophy are concerned, ignoring the few exceptions.

Whitehead once said that modern philosophy is a series of footnotes to Plato. It would be more accurate to say that it is a series of footnotes to Descartes. Cartesian dualism is rejected, but problematic implications of the doctrine dominate subsequent philosophy down to today. As I have tried to show, Descartes led to Locke, Berkeley, Hume, Kant, and to the anti-rationalist, anti-scientific nonsense of continental philosophy. The reaction against this led to the esoteric emptiness of analytic puzzle-solving.^{liv}

Instead of living in Descartes shadow - and in the shadow of a long series of intellectual blunders made over the centuries, what we philosophers need to do is to return to the fundamental problem which Descartes tried, and failed, to solve - the problem I articulated at the outset: *How can our human world, and the world of sentient life more generally, imbued as it is with the experiential, consciousness, free will, meaning and value, exist and best flourish embedded as it is in the physical universe?*

6 Remarks on How to Solve The Human World/Physical Universe Problem

What is the solution to the problem, granted that Cartesian dualism is untenable? Elsewhere I have written extensively on the subject,^{lv} so here I confine myself to a few brief remarks.

The person who has made a greater contribution towards solving the problem than any other is not a philosopher at all. He is a scientist: Charles Darwin (1809-1882). Darwinism helps explain how and why purposeful living things can evolve - have evolved - in a physicalistic universe. We need, however, to adopt a version of Darwinism which recognizes that the mechanisms of evolution themselves evolve as life evolves, purposive action playing an increasingly important role, especially when evolution by cultural means comes into play as a result of learning and imitation.^{lvi} We human beings are, above all, the products of evolution by cultural means. Such a version of Darwinism enables us to see that Darwinian evolution merges seamlessly with human history.

Cartesian dualism blunders right from the outset, when it assumes that physics could be in principle comprehensive and complete about the world around us. Actually, physics, and that part of science in principle reducible to physics, seeks to depict only a highly selected *aspect* of all that there is - the causally efficacious aspect, as it might be called, that aspect which determines how events unfold. Theoretical physics seeks to depict that which everything has in common with everything else, and that which needs to be specified in order that a description of a state of affairs at one instant can imply descriptions of states of affairs at subsequent instants - descriptions couched in exactly the same terms.^{lvii} This does not mean that a complete physics would tell us everything factual about the world around us. It would not necessarily tell us about what things look like, sound like, feel like, or what is like to *be* a certain kind of physical system (a living person). Colours, sounds, tactile qualities will be ignored by physics if they play no role in the predictive and explanatory task of physics.

An elementary argument establishes that physics cannot predict and explain experiential qualities. We can only know what redness as we see it is, if we have, at some stage in our life experienced the visual sensation of redness. A person blind from birth does not know what redness is. Such a person is not, however, debarred thereby from understanding all physics, including optics and the theory of colour perception. He or she is not debarred from understanding all implications of physics. That means physics cannot predict something like "This rose is red" (where "red" is to be understood as the colour we see), however complete the physical description of the rose and its environment may be.^{lviii}

But this built-in incompleteness in principle of physics does not matter. Redness, and other such experiential qualities do not need to be depicted for physics to perform successfully its predictive and explanatory tasks.

Furthermore, physics must omit these experiential qualities. If it included them, the beautifully unified, explanatory theories of physics would become horrendously disunified and non-explanatory, because endlessly many complex postulates linking physical conditions and experiential qualities would be added to physical theory. This would destroy the unity and explanatory power of physical theory. Thus omitting the experiential is the price that physics pays to be able to develop the marvellously unified and explanatory theories it has developed.^{lix}

What all this means is that the silence of physics about colours and sounds as we experience them provides no grounds whatsoever for holding that they do not exist out there in the world. Physics is designed by us specifically to avoid any mention of such qualities or properties. We should take it that the world is, in part, as we experience it to be (except when

we are suffering from illusions or hallucinations). We see what we ordinarily take ourselves to see, aspects of the world around us.^{lx} This is, of course, just what Darwinian evolution would arrange for us to be able to see. Animals which could not see aspects of their environment, but only the contents of their own minds (as Cartesian dualism would have it) would not last long in the real world.

This view has major implications for the mind/brain problem. It implies that this problem is analogous to, for example, the green grass/molecular structure problem. That brain processes can be conscious sensations, feelings, thoughts, ought perhaps to be no more mysterious than that a leaf (with a certain molecular structure) can be green.^{lxi}

Descartes, Locke, Berkeley, Hume, Kant, and a majority of philosophers who followed, made a disastrous mistake in accepting what Cartesian dualism would seem to imply: we really, most directly see, not aspects of things in the environment around us, but rather the contents of our minds. This blunder, perhaps more than any other, has condemned so much philosophy to foolishness, irrelevance, and triviality.^{lxii}

7 Conclusion

The world is heading towards disaster. If we continue as we are, climate change and the growth in the world's population may result in millions, possibly billions, dying from starvation, floods, fire, and war. In order to avoid these impending disasters, or cope with them as best we can to the extent that we do not, we need to learn how to do it. And for that in turn we need our institutions of learning - our schools and universities - to be rationally designed, well designed, to help us learn what to do and how to do it. That means, as a bare minimum, that universities give intellectual priority to the tasks of sustaining and promoting imaginative and critical exploration of our most urgent, fundamental problems of living - including global problems - and what we need to do about them. At present universities do nothing of the kind. From the past we have inherited the view that universities must, as a first priority, seek knowledge. First, knowledge is to be acquired; then, secondarily, it can be applied to help solve social problems. This excludes problems of living from the intellectual domain of inquiry, or pushes them to the periphery, and marginalizes them. As a result, universities fail to do what they most need to do to help humanity learn how to make progress towards as wise, as good, a world as possible. As we have seen, *three* of the four most elementary rules of reason are violated in a structural fashion. Universities devoted to the pursuit of knowledge in a way which is dissociated from a more fundamental concern with problems of living betray reason and, as a result of this betrayal, betray humanity.

This is a philosophical disaster. It is the result of the failure of philosophy to establish, within academia, that sustained attention that needs to be given to fundamental problems, both intellectual and practical. It is the result of the failure of academic philosophers even to entertain the idea that it is a basic task of philosophy to ensure that universities keep alive imaginative and critical - i.e. rational - thinking about our fundamental problems. For far too long philosophy has monumentally misunderstood what its basic task ought to be.

We need a revolution in academic philosophy so that we philosophers come to do all that we can to bring about a revolution in academia so that our fellow academics in turn come to do all that they can to help bring about a revolution in the world so that humanity begins to tackle in increasingly effective and cooperatively rational ways the immense global conflicts and problems we face.

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Notes

ⁱ This essay not only argues that these should be the basic tasks of philosophy; it also, at the same time, seeks to make this kind of contribution to philosophy - that is, I try to practise what I preach. For earlier attempts of mine see Maxwell (1984; 1998; 2004; 2007a; 2007b; 2010; 2012a; 2014a).

ⁱⁱ There is an important, secondary, related task for philosophy: to get clear about the basic aims and methods of diverse, worthwhile, problematic endeavours - science, art, literature, politics, education, economic endeavour, the law, the media, living one's life, creating a good world, and so on - and to attempt to develop improved aims and methods, particular attention being given to providing frameworks for such improvement. The hope is, of course, that ideas for improved aims and methods will lead to actual improvements in the real world. This second task for philosophy is related to the first task, for ideas about how to improve attempted solutions to fundamental problems may also be ideas about how to improve aims of various endeavours, and vice versa. For an example of how this two-way interaction between ideas and aims can take place, see the discussion of *aim-oriented empiricism* in section 4 below. This important secondary task for philosophy is not discussed explicitly in this essay in what follows. It is however discussed in detail in Maxwell (1984; 1998; 2004; 2007a; 2010; and 2014a). For a summary, see Maxwell (2007b).

ⁱⁱⁱ I have devoted two books to articulating, and trying to help solve, this fundamental problem: see Maxwell (2001; 2010). I there argue that this is our fundamental problem. See also Maxwell (1966; 1968a; 1968b; 1984, ch. 10; 2000b; 2011a). For my discussion of that aspect of the problem concerned primarily with the *flourishing* of what is of value in our human world, see Maxwell (1984; 2004; 2007a; 2014a); for summaries, see Maxwell (1980; 1992; 2000a; 2007b; 2009a, 2012a).

^{iv} The moment it is accepted that philosophy has, as its basic task, to tackle fundamental problems, it is clear that philosophy education must be transformed. Instead of learning philosophy via the history of philosophy, rather one needs to plunge, from the outset, into the fundamental problem as it confronts us today, relevant background knowledge in physics, biology, climate science, social inquiry and the humanities, politics, economics and international affairs being acquired as one goes along. That the history of philosophy is the wrong way to learn philosophy becomes all the more obvious granted the points to be made below - namely, that much of philosophy in the past has been alienated from concern with our fundamental problems. For hints as to what is required, see Maxwell (2005b and 2010).

^v Problems of quantum theory are more fundamental than problems of chemistry, and solving quantum theoretic problems may be regarded as providing solutions to problems of chemistry, but in general only in principle, not in practice, because in practice in order to solve chemical problems quantum mechanically, one needs to solve equations that often cannot be solved (associated with interactions of many complex molecules, for example).

^{vi} For what it means to say of a physical theory that it is unified see Maxwell (1998, chs. 3 and 4; 2004, appendix, section 2; 2007a, ch. 14, section 2; 2013a, section 4).

^{vii} Attempts have been made, recently, however, in a few universities to introduce sustained inter-disciplinary research into global problems: see, for example, the Grand Challenges Programme at my own university, UCL, at www.ucl.ac.uk/research/grand-challenges. On the UCL website, www.ucl.ac.uk/, under "Research", there appears "The Wisdom Agenda" which, if clicked on, reveals a document of the same title which may be downloaded. There is here an input from my own work. (Websites accessed 22 July 2013.) For an indication of recent changes in academia in the direction I argue for in this essay see Maxwell (2009b).

^{viii} My claim is that academic philosophy fails to put our fundamental problem, as I have

articulated it above, at the centre of the discipline. I do not want to suggest that no philosopher has ever discussed the problem. It is, for example, a theme of Whitehead (1932).

^{ix} There may well be good intellectual reasons for specializations, as rule (3) indicates. But it may come about for entirely non-intellectual, spurious and reprehensible reasons, having to do with promoting careers, research groups and special interests. Creating a new speciality, with its own journals and jargon, can do much for academic careers.

^x That academia should include sustained rational discussion of fundamental problems was argued long ago in Maxwell (1980). See also Maxwell (2010).

^{xi} Philosophers do not even have the excuse that the argument for the urgent need to transform academic inquiry has not been spelled out in the literature. On the contrary, I have spelled out the argument in great detail again and again for decades: see Maxwell (1976; 1984; 2004; 2010; 2014a). For summaries of the argument see Maxwell (1980; 1992; 2000a; 2003; 2007b; 2008a; 2008b; 2009a; 2012a; 2013a).

^{xii} Newton (1962).

^{xiii} Voltaire (1980, p. 68).

^{xiv} The term "scientist" however only came into use in the middle of the 19th century after it was introduced by William Whewell in 1834.

^{xv} Elsewhere I have argued that we need to recreate natural philosophy: see Maxwell (2012b).

^{xvi} See Maxwell (1998, ch. 2, section 7; 2013a, section 3).

^{xvii} See Hume (1959).

^{xviii} Kant (1953, pp. 52-89).

^{xix} For references to failed attempts at solving the problem see Kyburg (1970); Swain (1970); Howson (2000).

^{xx} Ziman (1968, p. 31).

^{xxi} Weinberg (1993, pp. 133-134).

^{xxii} Hawking and Mladinow (2010, ch. 1).

^{xxiii} See Maxwell (1974; 1998; 2004, especially appendix; 2005a; 2006; 2011b; 2013a; and especially 2007a, ch. 14).

^{xxiv} One scientist and philosopher of science who has not overlooked it is Alan Sokal: he supports aim-oriented empiricism (personal communication). See also Longuet-Higgins (1984).

^{xxv} Popper (1959; 1963, chs. 1, 10 and 11).

^{xxvi} See note 6.

^{xxvii} See note 23.

^{xxviii} See note 23.

^{xxix} Science has made progress because it has put aim-oriented empiricism into practice. But this has been done in only an implicit, unacknowledged, furtive, and partial fashion because scientists have sought to make science conform to their conviction that *standard empiricism* ought to be implemented - a bad philosophy of science that holds that empirical and simplicity considerations alone decide what theories are accepted and rejected in science, *no substantial claim about the universe being accepted as scientific knowledge independent of evidence*. The attempt to make science conform to standard empiricism has checked the explicit implementation of aim-oriented empiricism in practice, and as a result has subverted scientific progress somewhat. Rejection of standard empiricism, and the explicit and thoroughgoing acceptance and implementation of aim-oriented empiricism in its stead would be of great benefit to science: see Maxwell (1998, ch. 1; 2004, ch.2 and appendix; 2008a).

^{xxx} A point stressed in works referred to in note 23. See especially Maxwell (2004, appendix, section 5).

^{xxxi} See Maxwell (1993; 1998, pp. 219-223; 2004, pp. 34-39 and 191-205).

^{xxxii} See note 6.

^{xxxiii} See Maxwell (2004, pp. 39-67; 2008a).

^{xxxiv} Elsewhere, I have argued that aim-oriented empiricism needs to be generalized to form *aim-oriented rationality*, a conception of rationality designed to help us improve problematic aims as we act. Applied to academic inquiry, it leads to the conclusion that knowledge-inquiry needs to be transformed so that it becomes *wisdom-inquiry* - a kind of inquiry designed to help humanity realize what is genuinely of value in life, make progress towards as good and wise a world as possible: see works referred to in note 11.

^{xxxv} See Maxwell (2004, pp. 39-47).

^{xxxvi} See Maxwell (1998; 2004, pp. 47-51; 2008a; 2012b; 2013a).

^{xxxvii} Descartes (1949).

^{xxxviii} Locke (1961).

^{xxxix} Berkeley (1957).

^{xl} Hume (1959).

^{xli} Kant (1950).

^{xlii} Kant contributed to the nebula hypothesis concerning the origins of the solar system: according to this hypothesis, a mass of particles surrounding the sun gradually coalesced to form the planets.

^{xliii} Moore (1959).

^{xliv} Russell (1956); Wittgenstein (1960).

^{xlv} Russell (1905).

^{xlvi} Logical Positivism became well-known in the English speaking world as a result of A. J. Ayer's racy exposition in his *Language, Truth and Logic*: see Ayer (1960).

^{xlvii} One of the persistent intellectual sins of philosophy is the idea that philosophical problems need to be solved, can be solved, by an analysis of language, meaning or concepts. Wittgenstein (1958) is the worst offender. But the idea goes all the way back to Hume, and to Locke.

^{xlviii} Ryle (1949).

^{xlix} Popper has decisively criticized doing philosophy via analysis of concepts: see Popper (1963, ch. 2; 1976, section 7).

^l Popper (1959; 1962; 1963; 1969).

^{li} See, for example, Smart (1963); Nagel (1989); Dennett (1991); Singer (1995); Chalmers (1996); Maudlin (2010).

^{lii} Recent Philosophy of Science, and Science and Technological Studies, may seem to be branches of philosophy more engaged with science, and with the view of the universe presented to us by science. But these disciplines suffer from the general malaise of rampant specialization, or *specialism* as I have called it (Maxwell, 1980), and fail in their primary philosophical task to try to ensure that academia keeps alive sustained exploration of global problems. See Maxwell (2014b) for critical remarks concerning these specific disciplines, and for proposals as to what they ought to do.

^{liii} For details of my publications related in one way or another to this theme - seven books and over eighty articles (many available online) - see: <http://discovery.ucl.ac.uk/view/people/ANMAX22.date.html>; and <http://philpapers.org/profile/17092>. See also my website: <http://www.ucl.ac.uk/from-knowledge-to-wisdom>.

^{liv} There is a historical story that analytic philosophers sometimes tell to excuse the poverty of their discipline. It goes like this. "Once upon a time, philosophy all but encompassed the whole of rational inquiry. Then, after Newton, natural philosophy broke away and became independent natural science. Then, after the 18th century Enlightenment, the social sciences became independent of philosophy. And then logic and linguistics established themselves as

independent disciplines. Little was left for philosophy to do apart from conceptual analysis." But this story ignores that there are fundamental, problematic metaphysical, value and political assumptions inherent in the aims of science which require sustained imaginative and critical - that is, rational - exploration by philosophy. It ignores that fundamental problems, spanning specialized disciplines, need sustained rational attention - a task for philosophy, whether done by academic philosophers, scientists or others. Far from intellectual developments since the 17th century demanding that philosophy restrict its scope, it is all the other way round. Rampant specialization and fragmentation of research makes the task of engaging in fundamental problems all the more important and urgent.

^{lv} See works referred to in note 3.

^{lvi} For an account of Darwinian evolution along these lines see Maxwell (2010, ch. 8. See also Maxwell (2001, ch. 7).

^{lvii} Maxwell (1968a; 1998, pp. 141-155).

^{lviii} This argument is usually attributed to Nagel (1974) and Jackson (1986), although I first spelled out the argument some years earlier in Maxwell (1966; 1968a; 1968b): see especially Maxwell (1966, pp. 303-8; and 1968b, pp. 127 and 134-7). Decades later, in 1999, I wrote to Nagel and Jackson to ask them if they had come across my papers – and I sent copies. Nagel replied with great generosity “There is no justice. No, I was unaware of your papers, which made the central point before anyone else.” Jackson admitted he had read my “Understanding Sensations”. In his case, something close to plagiarism (of idea, not words) is involved. Some time later I met Jackson, and raised the matter with him. He said he had now abandoned what tends to be called “the knowledge argument”. So, having taken credit for my work, he had now repudiated it!

^{lix} Maxwell (2000b; 2010, ch. 3; 2011a).

^{lx} See especially Maxwell (2010, ch. 3). See also Maxwell (1966; 1968a; 1968b; 1984, ch. 10; 2000b; 2001, ch. 5; 2011a).

^{lxi} See Maxwell (2010, pp. 77-82). See also Maxwell (2000b and 2011a).

^{lxiii} Some ordinary language philosophers have argued that what we see most immediately and directly are, not sense data, but rather objects in the world around us: see Austin (1962) and Ryle (1949). These philosophers base their arguments on an appeal to ordinary language - not a convincing way to establish the point. And, being constrained by the crippling straightjacket of conceptual analysis, these philosophers failed to return philosophy to the HW/PhU problem - and were entirely incapable of doing that.