Science and Enlightenment: Two Great Problems of Learning

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Preface

In this book I argue that humanity faces two absolutely fundamental problems of learning: learning about the universe and ourselves and other forms of life as a part of the universe; and learning how to create a genuinely civilized world. We have solved the first problem of learning. We did that in the 17th century when we created modern science. But we have not yet solved the second problem. This puts us in a situation of unprecedented danger. For, as a result of solving the first problem and creating modern science and technology, we have enormously increased our power to act. We have employed this vastly increased power to act to enhance human welfare in endlessly many ways, via the development of modern medicine and hygiene, modern industry and agriculture, modern transport and communications, and in countless other ways. But, in the absence of the solution to the second great problem of learning, these very successes, the outcome of our enhanced power to act have, as often as not, led to harm and death. They have led to population growth, environmental degradation, species extinctions, inequality, the lethal character of modern war, the threat of nuclear weapons, pollution of earth, sea and air, and above all to the impending menace of climate change.

As a matter of extreme urgency, we need to discover how to solve the second great problem of learning. If we do not learn soon how to make progress towards a more civilized world, we may well end up destroying ourselves.

This book proposes a solution to the problem. We need to learn from our solution to the first great problem of learning how to go about solving the second great problem.

This is not an entirely new idea. It goes back to the 18th century Enlightenment. A key idea of the Enlightenment, especially the French Enlightenment, was to learn from scientific progress how to make social progress towards an enlightened world.

Unfortunately, in developing this idea, the *philosophes* of the Enlightenment, Voltaire, Diderot, Condorcet and the others, made dreadful blunders. They failed to capture correctly the progress-achieving methods of science. Inevitably, they then failed to generalize these methods correctly so as to facilitate progress in other fields of human endeavour besides science. And finally, and most disastrously, they failed to apply progress-achieving methods, generalized from science, to the social world, and above all to the task of making progress towards an enlightened world. Not only did they fail to formulate correctly progress-achieving methods, generalized from those of natural science, fruitfully applicable potentially to all worthwhile, problematic human endeavours. Far worse, they did not even conceive of the task in this methodological way. Instead, they thought the task was to develop the social sciences alongside the natural sciences. Thus the *philosophes* set about creating and developing the social sciences: economics, psychology, sociology, anthropology, and the rest. Instead of attempting to apply reason, extracted from science, to the task of making progress towards an enlightened world, the *philosophes* sought merely to make progress in *knowledge* about the social world. They thought that such knowledge had to be acquired as an essential preliminary to the task of making social progress towards enlightenment or civilization.

This botched version of the profound, basic Enlightenment idea was then developed throughout the 19th century by J.S. Mill, Karl Marx, Max Weber and others, and built into academia in the early 20th century with the creation of academic social science: economics, anthropology, sociology and the rest. As a result, modern science, and modern academic inquiry more generally, still embody these ancient blunders of the 18th century Enlightenment. Academic inquiry as it exists today is the outcome of an attempt to put the profound, basic Enlightenment idea into practice – the idea of learning from our solution to the first great problem of learning how to solve the second one. Unfortunately it is a very seriously *botched* attempt. The academic enterprise today does not, as it should, actively seek to help humanity solve those problems of living, including global problems, that need to be solved if humanity is to make progress towards a better, wiser, more civilized and enlightened world. Instead, it devotes itself to acquiring *knowledge* – knowledge of the natural world, and knowledge of the social world. Judged from the standpoint of helping humanity learn how to create a better world, academic inquiry, devoted to the pursuit of knowledge, is damagingly irrational in a wholesale, structural way, and this irrationality of our institutions of learning has much to do with the dangerous situation we find ourselves in today. We fail to learn how to make progress towards a better world because our institutions of learning are profoundly dysfunctional intellectually. They have in them blunders inherited from the Enlightenment.

In this book I spell out in a little more detail the nature of the crisis we face today as a result of solving the first great problem of learning but failing to solve the second one. I trace this crisis to blunders of the Enlightenment, and I specify precisely what needs to be done to develop what we so urgently need: a kind of academic enterprise rationally and effectively devoted to helping humanity make progress towards a better, wiser, more enlightened world.

This book is a part of a body of work I have published during the last forty years or so, devoted in one way or another to developing, arguing for and communicating the basic idea that we need to bring about a revolution in our universities if we are to make real progress towards a better world, and avoid disaster. The present work is perhaps the clearest and most succinct summary of the argument for the urgent need to transform what we have inherited from the Enlightenment.

It may be thought that it is a little implausible to suppose that intellectual blunders made by the Enlightenment nearly three centuries ago have not been put to rights long ago. That this is not the case has been highlighted dramatically by the publication in 2018 of Steven Pinker's book *Enlightenment NOW: The Case for Reason, Science, Humanism and Progress*. Science and Reason are at the heart of Pinker's book. And yet the conceptions of science and reason that Pinker employs fail entirely to correct the blunders of the Enlightenment. Even worse, Pinker reveals in his book that he is unaware of the body of work of the last forty years demonstrating just how harmfully defective the traditional Enlightenment is. Pinker is blind to the blunders of the 18th century Enlightenment. He appeals quite fundamentally in his book to science and reason, and is unaware of the fact that his conception of science is untenable, and his conception of reason is irrational. What Pinker appeals to is not reason, but rather a characteristic kind of irrationality masquerading as reason.

What, then, is Pinker's untenable conception of science? He considers two options, the views of Karl Popper, and the view that scientists favour hypotheses that are compatible with existing knowledge (Bayesianism). But neither view is tenable. Physics persistently accepts *unified* theories only, which means it makes a highly problematic metaphysical assumption to the effect that there is some kind of underlying unity in nature. Precisely because this assumption, in the specific form it is implicitly accepted by physics at any stage of its development, is all too likely to be false, it is essential that it is made explicit within physics, and subjected to sustained critical scrutiny. In order to do this, we need to construe physics,

and so natural science, as making a hierarchy of metaphysical assumptions concerning the comprehensibility and knowability of the universe that become increasingly insubstantial and unproblematic as one goes up the hierarchy. As a result, physics is provided with a framework of relatively unproblematic assumptions, high up in the hierarchy, within which the most problematic assumptions, low down in the hierarchy, can be improved as scientific knowledge improves. In other words, because the basic aim of science of seeking truth *presupposed to be unified or explanatory* is profoundly problematic, science needs to represent this aim in the form of a hierarchy of aims to facilitate improvement of aims most problematic, low down in the hierarchy. As a result, something like positive feedback is possible between improving knowledge, and improving aims and methods - improving knowledge-about-how-to-improve-knowledge. As we improve our knowledge of nature, we improve our knowledge about how to improve knowledge. This hierarchical view is required for scientific rigour, to promote scientific progress, and in order to solve basic philosophical problems about science, most notably the problem of induction which goes back to David Hume in the 18th century.

And it is not just metaphysical assumptions that are inherent in the aims of science; profoundly problematic assumptions concerning values and the social use of science are inherent in the aims of science as well. These problematic assumptions inherent in research aims need to be made explicit within the intellectual domain of science so that they can be critically assessed, alternatives being developed and scrutinized, in the hope that the aims of research can be improved, can come better to reflect the best interests of humanity.

It is this hierarchical, aims-improving conception of scientific method that needs to be generalized so that it becomes an aims-improving conception of rationality fruitfully applicable, in principle, to all worthwhile human endeavours with problematic aims: politics, industry, agriculture, the law, the media, social media, education, and so on. A proper basic task for social inquiry is to work out how humanity can get this hierarchical, aims-improving methodology into social and cultural life. All conceptions of reason that do not include methods designed to help improve aims will lead us systematically astray (whenever aims have undesirable consequences, as they often do) and thus cannot constitute authentic reason.

But all this is ignored by Pinker's book. And it is ignored by modern science, and by academic inquiry more generally, as these exist today. Scientists still cling to the untenable idea that, in the end, it is just *evidence* that decides what theories are accepted and rejected (with simplicity possibly playing a role as well), *there being in science no metaphysical thesis about the nature of the universe, accepted as a part of scientific knowledge independently of evidence*. The hierarchical, aims-improving view, just indicated, is ignored. And academics, both scientists and non-scientists, ignore the hierarchical, aims-improving conception of rationality, arrived at by generalizing the hierarchical conception of science that alone exhibits science as a rational enterprise, and does justice to scientific progress. Social scientists fail to take up the task of working out how humanity can get the aims-improving conception of rationality into social life. The very idea is all but unknown. Academics do not even apply the aims-improving conception of rationality to academic inquiry itself. And as a result, academia persists in the Enlightenment quest to acquire knowledge, and fails to devote itself, primarily to helping humanity learn how to make progress towards a good world - helping humanity solve the second great problem of learning, in other words.

Does any of this matter? It does. Our current global problems are, in part, the outcome. Modern science and technology have brought us immense benefits, as I have already emphasized. But, as a result of making possible the development of modern industry, agriculture, hygiene, medicine and armaments, they have also led to population growth, habitat destruction, species extinctions, lethal modern war, the threat of nuclear weapons,

pollution of earth, sea and air, and climate change. These global problems have come about as undesirable consequences of new social endeavours we have pursued, made possible by science and technology. (Our problems are by-products of our successes.) We have failed to anticipate these undesirable consequences of our actions, or have failed to heed anticipations when they have been made, and take appropriate action. We have failed, in short, to build into our institutions, social endeavours and culture the hierarchical, aims-improving conception of rationality, indicated above, generalized from the progress-achieving methods of science. Even though it has long been argued that this needs to be done, the argument has largely been ignored by scientific and academic establishments. The blunders of the Enlightenment persist in the intellectual and institutional structure of scientific and academic inquiry as these exist today. Academia seeks *knowledge*, and fails to give intellectual priority to the task of helping humanity make progress towards a more civilized, enlightened world. It persists in improving the solution to the first great problem, but fails to tackle the second great problem, learning as it does so from the solution to the first one.

We urgently need to bring about a revolution in science, and in academia more generally, so that the basic task ceases to be merely expert knowledge, and becomes rather that of helping humanity learn how to make progress towards a better world. This book shows what changes are required to create what we need.