

How Useful is the Scientific World-view for the Human Race?

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Is it not obvious that the scientific world-view is enormously useful for humanity? Where would we be without computers, airplanes, vaccines, automobiles, microwave ovens and numerous other technological developments? I will argue, however, that the common opinion about the obvious usefulness of science is not so simple. By making explicit and analyzing several key issues and assumptions concerning the relationships between the sciences, technology and humanity, I hope to provide some indication of the inherent complexity of the thought-provoking topic question. The main questions I will address are: (1) What is *the* scientific world-view? (2) Useful to *who*? and (3) Why only for the human race?

What is *the* scientific world-view?

Prevalent opinion mistakenly tends to conflate science with technology. It is certainly true that technological advancements are possible because of scientific research, but the fundamental goal of the sciences is to gain an ever deeper and more pervasive *understanding* of the laws of the universe, often with little ambition to create new gadgets. Numerous eminent scientists (or ‘natural philosophers’, as they were called until around the mid-nineteenth century) from Archimedes of Syracuse to Galileo Galilei to Albert Einstein have maintained such an outlook. Indeed, Arthur Eddington and Erwin Schrödinger, among others, have even admitted a proper place for mysticism.

One can, of course, find many experimental physicists who do not concern themselves with the pervasive metaphysical conundrums inherent to quantum theory, but the pioneering theoreticians could not avoid them. If we want any hope of making fundamental progress in the sciences, then at least some philosophers and scientists need to tackle such interdisciplinary metaphysical issues in physics, as well as in the other sciences. Professor Peter Atkins, SmithKline Beecham Fellow and Tutor in Physical Chemistry at Lincoln College, University of Oxford, notes that

around 30 percent of the manufacturing economy stems from the application of quantum mechanics: that is not bad for a theory that we do not understand and suggests that there would be an extraordinary surge in the economy should we ever understand the theory properly, for understanding always enhances application.¹

If businesses want a continuous flow of innovative high-tech products, then applied research is essential. However, applied research would cease to be fruitful without pure research,

¹ Atkins in the Foreword to Jim Baggott, 2004, *Beyond Measure: Modern Physics, Philosophy and the Meaning of*

which has always been and only can be pioneered by the philosophically-minded (and often spiritually or religiously inspired) scientists who seek greater understanding of the rational wonders of nature. It is unfortunate that this fact is too easily forgotten.

It has also been falsely yet widely assumed by the general public, and even by many academics who should know better, that the sciences somehow or other support *materialism*, the metaphysical belief that all that exists is physical. In fact, numerous theoretical physicists have been denying materialism since the beginnings of modern science, and some, such as James Jeans, have actually supported *idealism*, the metaphysical claim that all that exists is *mental* rather than physical. Others, such as Werner Heisenberg and more recently Roger Penrose, have explicitly endorsed a Platonic understanding of the foundations of science, at least concerning the role of mathematics. *Platonic realists* in physics believe that the physical world is real—it is not just an illusion or a dream—but that the mathematical laws of physics are eternally unchanging so are in some sense *more* real than the perpetual flux and flow of physical reality. Thus, Heisenberg was neither a materialist nor an idealist; rather, he incorporated elements of both. And Ernest Mach, the great physicist who denied the reality of atoms because they could not be directly observed, championed a philosophy of science that has been compared by Schrödinger to the Upanishads and by Philip Frank and Stanley Jaki to Buddhism.

I have here been limiting my analysis of the sciences to physics, but I could have made similar kinds of arguments for the other sciences. My thesis argues that the most reasonable world-view that can account for the success of physics is Platonic realism, but it is not difficult to find counterarguments from various opponents. I also argue that the sciences help us discover important truths about the nature of reality, but this view is quite unpopular in contemporary philosophy and sociology. Thus, the simple yet extremely important point that I am making here is that there is no such thing as *the* accepted scientific world-view.

Useful to *Who*?

At first glance, there seems no point in doubting the obvious usefulness of our technological developments, and, within difficult to define moral and practical limits, I support reaching for our potential in all facets of scientific research. However, the resulting technological marvels have little or no benefit for a vast number of people across the globe. A laptop is of no value to the more than 800 million illiterate adults in the world,² microwave ovens are of no benefit to the 149 million children in developing countries who are suffering from malnutrition,³ and the latest medical advancements are beyond the reach of the 46 million people without health insurance in the USA.⁴ Moreover, it is common knowledge that technology has also been used in the service of death and destruction. Therefore, we would surely be misguided in assuming that science viewed as technology has been useful for the whole human race.

A further difficulty becomes clear if we accept my earlier claim that the sciences actually aim for greater understanding rather than merely being a means for technological developments.

² The United Nations Literacy Decade (2003-2012).

³ UNICEF.

⁴ Paul Harris, February 19, 2006 *The Observer*.

For example, it is not easy to see how Isaac Newton's insights into the universal nature of gravitation could possibly have been of any practical value to, say, the poor peasant farmers of his day. One may argue that technological developments resulting from his discoveries have benefited humanity, but I have already shown this argument to be misleading. Indeed, the mechanistic world-view, which is usually (though misleadingly) assumed to have been supported by classical physics, may have helped to drive the industrial revolution, but it dehumanized many people in the process, seeing them as mere cogs in a gigantic purposeless machine. However, at least since Fritjof Capra, there is general acknowledgement of the inherent complexity and holistic, dynamic interconnectedness of all phenomena, a view similar to the ancient Platonic philosophers who recognized the intrinsic moral nature of the sciences. And biologist Bruce Lipton is currently relying upon quantum physics and cell biology to show how our thoughts really affect our bodies, which gives consciousness a fundamental role that has been denied by the materialist world-view. Such metaphysical shifts in science, if taken seriously, could open the door to much greater benefits to humanity as whole.

Why Only for the *Human Race*?

Of course we need a strong, vibrant economy, but the parochial assumptions of economic logic are perilously inconsistent with the reality of our dependence upon the natural environment. Consequently, when turning our scientific knowledge into technological applications, we should be aiming to benefit the extraordinarily complex and dynamic biosphere itself, so far as possible, rather than merely limiting ourselves to short-term economic concerns. Fortunately there are various voices calling for corrective action, but many wealthy nations tend not to be responsibly concerned with the environment nor even with humanity in general. For example, 'at present, only 10% of medicines that are being developed are for diseases that afflict those in developing countries.'⁵

Moreover, rapid developments in robotics and biology (among other sciences) are now making the term 'human' even more ambiguous. It is not uncommon to replace certain human body parts with ones from nonhuman animals or with artificial devices, and further scientific advances will continue to make it more difficult to demarcate definitive boundaries between humans, nonhuman animals and mobile computers with artificial intelligence (commonly referred to as robots or androids). Indeed, biologists already employ the term 'chimera' for organisms with a mixture of cells from at least two different organisms, which may be from the same or different species. So, what is a human? I do not have the answer.

Summary

I have here offered a philosophical and sociologically-inspired account of the difficulties with the common but misplaced assumption that there is *one* accepted scientific world-view which is obviously useful for humanity *as a whole*. However, technological developments do in fact have the *potential* to help all or at least most of humanity without creating so much harm to the biosphere and its myriad life-forms, and I hope that my analysis will promote

⁵ Monday, 26 February, 2001, 'Brown to tackle global child poverty', BBC News.

further discussion concerning how best to utilize our increasingly sophisticated scientific understanding. It is essential to invest in knowledge, but, like any good investor, we must also make wise decisions based upon our knowledge. I am very grateful for the opportunity to respond to the inspiring topic question.