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THE LINK BETWEEN SCIENCE AND HUMAN VALUES

by
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The name, the Institute for Science and Human Values, suggests a compelling relationship between how we come to know and how we aim to act. Is this justified? The naturalistic fallacy states it is not possible to obtain a prescriptive system from a descriptive one. In other words, if this is true, we cannot expect to get our morals from scientific knowledge of the natural order. This in turn suggests that any claim to a close relationship between science and human values, or ethics, may be exaggerated if not mistaken. The following arguments will demonstrate that while the naturalistic fallacy may be formally correct, scientific knowledge is highly relevant to choosing those actions that best conform to our most basic ethical principles, and is often an excellent guide to refining those principles as we learn more about ourselves from advances in the sciences.

First, it is useful to remind ourselves that science is a way of knowing about the natural order, the only one that by definition combines observation, experimentation, and logical analysis. There is no place for "faith" in this process, unless by faith one means the conviction that the process can work when applied to understanding nature, as opposed to "supernature." While many people make claims for the supernatural, no person to date has ever discovered the tiniest fragment of evidence for its existence that would pass the muster of science. Had such a fragment ever been discovered, every reasonable person, especially scientists, would agree it was the most important discovery in the human saga and it would become generally known. That it is not generally known and that it has been passionately sought gives apt demonstration that the probability of its existence becomes almost vanishingly small. Thus, as far as evidence and reason can take us, the only order with which we need concern ourselves is the natural order of which we are a part.

The idea that science is only one way of knowing has been emphasized by certain intellectuals in defense of other ways for which equal weight is sometimes claimed. As long as we restrict ourselves to the natural order, that claim can be disproved. This can be demonstrated by creating a sliding scale with science, as defined above, at one end and faith, as usually understood, at the other. This leaves only three possibilities for a truth claim. It must either be based on science alone, on faith alone, or on some combination of the two that lies somewhere in between. Of the three, only science is based on what can be confirmed by our senses, properly extended by instruments, and combined with logical thought. Sophisticated arguments can be offered speculating on the role of the nervous system in interpreting "reality." However, if the nervous system itself is only part of the natural order mentioned in the previous paragraph, then it too can

be studied by the scientific process, as is occurring right now. There is no doubt that science is a superior way of knowing the natural order.

We may also hear that since scientists make mistakes and scientific theories are constantly being overturned, science is seriously flawed and should not be trusted. In reply, we can note that while scientists, being human, indeed do make mistakes, science itself provides the error correction as well as the answer to objections based on the false claim that new science always overturns old science. The scientific community is highly skeptical of new work and checks it very carefully. Errors may appear, but they will always eventually be found, for there are reputations to be made by demonstrating a popular idea is wrong, almost as much as by showing it is right. No other human activity has such a rigorous self-correcting process. As for science being constantly overturned, what is actually happening in most cases is that science is being constantly expanded. Most modern engineering outside of micro- and nano- electronics is still based on Newton's laws. The strength of the bridge you drive over or the performance of the jet you fly in does not depend on relativity or quantum mechanics. These fields only expand the range of classical mechanics to realms infrequently encountered in our daily lives. Overall, science is spectacularly sound in method and successful in practice. Knowing this is why many of us become scientists; for as a professional class we subscribe to the readily confirmed idea that, in the long run, *the truth matters.*

Given this background on science, it is now possible to show where science plays important roles both in implementing and increasingly, in refining human values.

It is easiest to demonstrate the role of science if we start where our basic values are already given. A good, easy to read primer on common human values is Paul Kurtz's *Forbidden Fruit, The Ethics of Secular Humanism*. Many other treatments are available on different levels of sophistication. Not surprisingly, the most basic of these ethics are almost - if not quite - universal among all the great human cultures the world over. We can ask what role does science plays in implementing what Kurtz calls "the common moral decencies"

In effect, what role does knowing the facts that bear on a decision play in making the best morally decent and responsible decision? Most people would borrow money if needed to provide their child with surgery to correct a serious medical condition and accept financial constraints in other areas. The welfare of the child is more important than replacing an old car. Most people would not accommodate a known assassin if they could deflect his search from where the intended victim was hiding. The life of the intended victim is worth the personal risk of inviting the assassin's wrath. Scientific knowledge is definitely involved in the assessment of the physician who recommends surgery for the child, and could be involved in your knowledge of the assassin's temperament and likely reactions. All of these assessments and more, combined, provide the basis for the decisions made. Factual knowledge could be critical in both cases. Scientific knowledge is often part of what one needs to know.

So far, much of this is Philosophy 101 on personal ethics, but it can be expanded to complex cases where risk assessments and cost-benefit analyses become extremely complex, bringing in huge databases that must be digested and analyzed with the best modern techniques. A current example is understanding global climate change and what to do about it. The scientific

community has reached a near-consensus on the most probable cause, but the problem is further complicated by the difficulty of assessing the economic impact of different courses of action, and the knowledge that both severe environmental consequences as well as global economic depressions often translate into destructive warfare. Our collective knowledge base for answering the climate change question is based on physical science and is now reasonably good. Economic predictions remain less reliable, thanks to the human dimension. Finally, even given a good solution to the climate change problem and a reliable economic prediction, we are left with the political problem of educating the public on the wisest course. However, that problem as much as the economic problem involves an arguably much finer knowledge of ourselves than we have today. One sees in this current example of a major world issue how difficult it is to actually determine and achieve the best possible solution, Clearly, the better our scientific knowledge base is in *all* the areas noted, the easier it is to decide which course of action is best.

To implement basic human values, scientific knowledge is obviously very relevant.

This brings us to the more difficult question of whether science has anything to say about what these values should be in the first place. That takes us back to the naturalistic fallacy that suggests science has little or no contribution to make in determining what our most basic ethical principles and values should be. That view has been recently advocated by a distinguished paleontologist, the late Stephen J. Gould, in his work on "separate magisteria," where he advocates leaving morals to religion while studies of nature remain the province of science. Gould's view encounters serious difficulties when we examine what is known about human nature. We can use this knowledge to show that science has important things to say about our most basic ethical principles and values.

If self-replicating molecules that slowly evolved into more complex forms over roughly three billion years to produce human beings had, at any stage, produced a dominant self-destructive tendency, we would not be here today. We have abundant evidence that biological life on Earth is oriented toward survival and is not naturally self-destructive, having no built-in "death urge" as once proposed by Freud. We do eventually wear out as individuals, but life itself carries on rather well. This has definite ethical implications for the active promotion of a fulfilling life and for taking account of all sentient beings' innate capacities for pleasure and suffering. This life-affirming propensity is literally "built into our genes," independent of culture. Culture has played a dominant role with some success in directing this innate propensity, but culture did not produce it.

A critic might conclude that this is a trivial statement, saying we have known this for a long time with no need for science to demonstrate it. However, when we ask in more detail what it is that people really want by nature, the issue becomes more complex. Do people really want destructive cultural influences to distort their natural life-affirming inclination, and/or end their lives in personal sacrifice on some battlefield or in an act of terrorism? Where is the break between ecstasy and insanity? While questions like these are not always easy to answer, a reliable answer necessarily involves knowing the content of a person's mind, and there are few

things for which we have less reliable in-depth scientific knowledge than the detailed operation of the human mind, which is where all of us "live" in our conceptual and emotional lives.

Some critics would say that we do not need this reliable scientific knowledge, because culture has given us all the insights we need to construct a workable system of ethics. But has it? If so, why are there still some radical differences among the great world religions that claim primacy in the realm of ethics, and which scholars acknowledge remain the cultural institutions to which many people still look for moral instruction? Is stoning a woman for committing adultery a just punishment? Is apostasy a punishable offense? What role does sexuality naturally play in all major forms of human activity (as a stimulant for war, for example), and how should it be managed, if at all, by either society or the moral individual? As the questions become increasingly complex and mulitvariabled, we see that our lack of reliable scientific knowledge of *ourselves* makes these questions difficult to answer.

Neuroscientist Steven Pinker concludes his book *The Blank Slate* with an appendix that documents the many features all world cultures have in common, even though, as anthropologists tell us, the way these common features are expressed varies widely from one culture to another depending on the circumstances in which the different cultures developed. This clearly points to an underlying human nature, one that we understand only partially. Mapping this human nature in much greater detail means understanding our minds much better than we do today, and this understanding can only come from science. Any other approach involves some degree of "faith," as described at the beginning of this essay, and the history of conflicting "faiths" gives us no confidence they can provide this greater understanding. Finally, to those who claim that mind is not the neural networks of our brains, we can offer a simple answer for which there is no empirical evidence to the contrary. Harsh as it may sound to some, with no living brain there is no reliable evidence for a mind.

If we want to understand better the genetically influenced (but not determined) propensities for what we really want in our lives, beyond knowing that it is our nature to live and seek "fulfillment," science and especially neuroscience become quite relevant to refining even our basic ethical principles and values.

I hope the link between science and human values has been shown to be strong. The naturalistic fallacy may still apply in principle, but in practice it is easy to demonstrate the increasing appropriate role of science in resolving ethical dilemmas and for clarifying those values that arise directly from our genetic human nature. This does not deny the critical role of culture in managing the human drama, nor claim that a complete "convergence" of science and ethics will ever be achieved, as suggested but not predicted in E. O. Wilson's *Concilience.* Nevertheless, in establishing who we are, how we came to be that way, and how our most basic wants may best be satisfied, it is hard to deny science a major role in our future work on the subject of ethics and human values.

In conclusion, it is worth noting that many of the thinkers of the Enlightenment placed an ethical imperative at the head of their arguments for an improved human world. The overriding goal of that great movement in human thought was not, as sometimes asserted, the destruction of religion. Where religion stood in the way of human betterment, it was attacked, and often successfully, but human betterment was the goal. The great thinkers of that era, which gave us the American Revolution, saw hope for worldly progress at the end of the long tunnel that began with the collapse of classical civilization in the West, ISHV is simply continuing in that vein. Most of us in ISHV are strictly secular in our personal philosophies, but we think progress is best served by working with all ethical open-minded people. The goal of human betterment has not changed.

That said, many of us also think that the question of religion vs. nontheism, or atheism as some wish to call it, is not the central question for our time. No true scientist will turn away from reliable evidence for anything, or stop being highly skeptical of everything for which no reliable evidence can be offered. Institutional separation of church and state seems to us to be the right compromise on that issue today. However, we know that humanity evolves along with everything else in our Universe. Many of us think the science and religion question will answer itself in time if we are guided in our understanding by the reliable knowledge that science gives us and by those ethical principles that favor the life that science has already told us is striving to survive and develop further. This underlies ISHV's main emphasis on what we can address constructively right now: continuing the development of life-affirming human values and defending the science that both contributes to a better understanding of these values, and gives us the means to implement them.