What is our Real Knowledge about the Human Being
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OUR DEEPEST BELIEFS ABOUT OURSELVES

PETER VAN INWAGEN

Here is a list of beliefs – fairly common beliefs – about human beings:

Human beings are rational animals, in a sense of 'rational' in which no other terrestrial animal is rational.

Because human beings are rational animals, they are more important (more important in the great scheme of things, one might say) than dogs or dolphins, just as dogs and dolphins are more important than snails and clams; that they have an objective moral value that exceeds that of any other terrestrial species.

The behavior of human beings is subject to moral constraints, objectively correct moral constraints, and human beings are capable of recognizing this fact.

Human beings have free will.

Human beings do not come to an end with death.

There is a supernatural order – that the natural world is not all there is, but rather exists within a 'surround' of personal and invisible powers – and that the existence of this supernatural order is not a matter of practical and not merely theoretical or intellectual interest for human beings.

These are examples of the kind of belief to which my title refers: 'our deepest beliefs about ourselves'. They are examples of our deepest beliefs in this sense: that for a person who has them to give them up (to give any of them up) would involve a radical change – a change as radical as any change could be – in the way that person thought about human beings. And, of course, if someone did not have these beliefs and then acquired any of them, *that* would involve a radical change in the way that person thought about human beings. Those who reject these beliefs would agree that they are in this sense deep: such people think of themselves has having come to a radically different (and of course superior) view of human

beings from those who have them. The beliefs in my list of examples are, of course, traditional or perennial beliefs. I do not mean the description 'our deepest beliefs about ourselves' to apply only to perennial beliefs like the ones in my list. I mean their denials – the belief that human beings are not all that different from other animals; the belief that 'the cosmos is all there is or was or ever will be' – also to fall under this description.

The topic we have been asked to address is 'our knowledge of a human being'. The knowledge I wish to discuss is scientific knowledge. I want to ask whether science – physics, cosmology and astronomy, geology and paleontology, biology, neuroscience – can confirm or refute any of our deepest beliefs about ourselves. It will be my contention that science has not told us whether any of our deepest beliefs about ourselves is true or false, and that in fact (unless science does something radically different from anything science has done so far) science *cannot* do this, cannot radically alter our view of ourselves. In saying this, I do not mean to deny the obvious. I do not mean to deny that the discoveries of science have *caused* radical alterations of many people's deepest beliefs about human beings. My thesis is that that they *shouldn't* have: that these alterations were not *rational* responses to the discoveries of science. Owing to limitations of space, I will discuss only the question whether science has refuted any of our traditional or perennial deep beliefs about ourselves, beliefs like the ones I have listed.

Let me present an analogy. In the year 1300, most people (most people who had any beliefs at all on the matter) believed that the earth was at the center of the universe. In the light of the subsequent discovery that the earth revolved around the sun, people had to stop having that belief; they had in fact to start having the belief that the earth was *not* at the center of the universe. But consider another belief that people had in the year 1300: their belief in the alternation of day and night. We have not had to stop having *that* belief. In virtue of a certain scientific discovery, people have come simply to accept a new account of the celestial kinematics and geometry that lies behind the alternation of day and night. It is my position that our deepest beliefs about ourselves – both the traditional beliefs and their starker, more up-to-date rivals – are like the belief in the alternation of day and night in at least this respect: they are not the sort of belief that can be confirmed or refuted by new information. (Of course some of them are rather more *controversial* than the belief in the alternation of day and night).

I am not saying that every important, widespread belief about human beings is immune to refutation by scientific discovery. The Greco-medieval theory of humours has been refuted by science, and the belief in

a psychology of humours was certainly an important belief about human beings. But it wasn't one of anyone's deepest beliefs about human beings: a belief about ourselves can be important without being one of our deepest beliefs about ourselves.

It is not my purpose to dispute any scientific discovery or thesis. Some of the theses I shall dispute are indeed theses *about* science, but they are not themselves scientific theses. They are not theses like 'The particles that carry the color-force are themselves subject to the color-force' or 'Many important properties of water are due to hydrogen bonding'. They are not theses such that you would fail your doctoral qualifying exam in physics or paleontology or molecular biology if you got them wrong. The theses I shall dispute are *philosophical* theses about science, about what science has done or can do.

It is not my purpose to contend that science is of no philosophical relevance. That would be simply false. (Kant, for example, believed that he had shown that it was impossible for human reason to treat the physical world as it treats, say, the moon: as a single, unified object. I take the modern science of cosmology to have shown that he was mistaken). I contend only that *certain* philosophical conclusions cannot be drawn from any actual scientific discovery or scientific theory: conclusions concerning the truth or falsity of our deepest beliefs about ourselves.

It is not my purpose to depreciate the accomplishments of science. Science tells us how the physical world works. To say that it is not the business of science to answer every question that we might want to ask about ourselves is not to belittle science.

I do not claim to be able to demonstrate from first principles that science cannot adjudicate the truth or falsity of our deepest beliefs about ourselves. After all, we human beings are parts of the very physical world that science explains the workings of (at any rate, I'll stipulate this; and it is in fact something I believe). It might therefore be that in the course of explaining how we 'work' and how the workings of the physical world have produced beings like ourselves, science will tell us everything there is to know about ourselves. But if it is not self-evidently false that science can do this, neither is it self-evidently true.

My argument is a posteriori, not a priori. It pertains to the attempts (all failures, I judge) that have actually been made to deduce from actual scientific discoveries propositions about ourselves that are of deep philosophical consequence – and not to any *possible* arguments from any *possible* scientific discoveries. (For who am I to speculate about what science

may accomplish in the future?) I must defend this conclusion by considering examples, and I can consider only a few – and even those much more briefly than they deserve.

If one wishes to show that science has refuted some traditional deep belief about ourselves, there are two general strategies one might follow. First, one might try to show, for some belief that is certainly one of the traditional deep beliefs about ourselves, that science has shown this belief to be false. Secondly, for some traditional belief about human beings that science has certainly shown to be false, assert that this belief was a 'deep' belief.

Here are two familiar examples of first strategy at work: 'The Darwinian theory of evolution shows that human beings do not have a divine creator'; 'The fact that human beings share almost all their DNA with various primate species shows that there the supposed radical gulf between human beings and other terrestrial animals is an illusion'.

These two claims on behalf of science are empty. The Darwinian theory of evolution does not show that we do not have a divine creator. For suppose that the world we live in is a Darwinian world – that all mutations are due to chance (to genetic copying errors, for example) and that all taxonomic diversification is due to some mixture of chance and the culling of gene pools by natural selection. Since this world of ours is actual, it is possible. And God is by definition omnipotent. If he is omnipotent, he is able to create *any* possible world and is therefore able to create *this* possible world, this Darwinian world we inhabit. I should perhaps point out, parenthetically, that I am not saying that science has never refuted any religious beliefs (any beliefs held on religious grounds). That would be demonstrably wrong. Science has, for example, refuted the belief that the world was created in six days six thousand years ago. My position is rather that any religious belief that science has refuted was not one of our deepest beliefs about ourselves. Let us turn to the second example. It is a scientific fact that we share 98.7 percent (or something close to that; I've seen various numbers quoted) of our genetic material with chimpanzees. But this fact does not demonstrate the falsity of the perennial belief that a vast gulf separates human beings from all other terrestrial animals. It can't demonstrate the falsity of that belief because that belief is not false. The vast gulf is like the alternation of night and day: there it is, and there's no getting round it. I once saw a cartoon that makes this point nicely. A hostess is introducing a man and a chimp at a cocktail party: 'You two will have a lot to talk about', she says, 'you share 99 percent of your DNA'. Perhaps we should regard it as puzzling that there should be a vast phe-

notypic difference between two species whose genomes are so similar, but the world is full of puzzles.

Now the second strategy. Here is an example of the application of this strategy: assert that the belief that we human beings live at the geometrical center of a small cosmos of recent origin was at one time one of our deepest beliefs about ourselves; point out that science has shown this belief to be false.

But this belief was never one of anyone's deepest beliefs about human beings. Consider first the size of the Greco-medieval cosmos. The Greeks and the medievals knew that the result of measuring the angle between two fixed stars was independent of latitude and longitude and the time of day. They knew, that is to say, that, in comparison with the hypothetical sphere of the fixed stars, the earth could be treated as a dimensionless point. And they knew that this 'dimensionless point' was in reality about eight thousand miles in diameter. They were, by the nature of the case, unable to calculate the radius of the stellar sphere, but one medieval work of science fiction gives it a radius of (in modern terms) something like 50 light-minutes. The radius of the Hubble universe, present-day astronomers tell us, is about 12 billion light-years. The ratio of 12 billion years to 50 minutes is a big number (about 1.26 x 10 exp 14), but both universes beggar the human imagination. (What the medieval science-fiction writer actually said was that a trip by fast horse to the stellar sphere, if it were possible, would take 40,000 years). Whether we live in the medieval *mundus* or the modern Hubble universe, we inhabit a tiny island in the midst of an unimaginable vastness.

Consider next the fact that, as we now know, we do not live at the center of the universe – for the very good reason that the universe has no center. Many modern writers seem to suppose that the medievals believed we lived at the center of the universe because they believed that our existence was a part of the central purpose of creation and that showing that we do not live at the center of the universe therefore shows that our existence is not a part of the central purpose of creation. I do not perhaps need to point out that this reasoning is logically invalid; I do want to make the point that it has a false premise. The medievals (like the pagan Greeks before them) believed that we were at the geometrical center of the cosmos for empirical reasons (that, is, after all, how things *look*) and for philosophical reasons: since (their physics told them) we are made of a particularly gross kind of matter whose *telos* is to fall, to *sink*, naturally we find ourselves near the lowest place, near the center. The higher sorts of material things – the highest being the stellar sphere – are at the highest place in the literal sense of

the word. The highest material objects in the metaphorical sense, those that best imitate God, are at an immense height – millions of miles *up*. In short, the medieval belief that we live near the center of the universe was due neither to Christian theology nor to any of the medievals' deepest beliefs about themselves. The modern discovery that the universe has no center did not, therefore, as some suppose, 'de-center' humanity in any sense but the most literal, geometrical sense; and this literal sense is irrelevant to our deepest beliefs about ourselves.

Consider finally the age of the universe. The medievals would have been astonished to learn that some among us think that they would have resisted the idea that the physical universe was billions of years old. The philosophically significant alternatives, the medievals would have said, were that the age of the universe is infinite (as Aristotle and most medieval atheists held) or that it's finite. They believed, or at least Thomas Aquinas did, that human reason cannot answer the question whether the universe had a beginning in time, and held that divine revelation provides our only reason for believing that the universe had a beginning. They would have been delighted to learn that they were wrong about this and that human reason would eventually show that the universe had a beginning in time. And, not having been literalists about Genesis (that kind of literalism was a product of Reformation and Counter-reformation politics), they would have been willing to accept any given figure as to its age.

There are, as I have said, many other applications of both strategies, all of them, in my view, failures. The various applications of the two strategies have to be examined individually, each on its own merits – which, I insist, invariably turn out, upon examination, to be non-existent. I do not, therefore, claim to have refuted the proposition the science can adjudicate the truth or falsity of our deepest beliefs about ourselves. I have made it clear that I think that science has not done this, and I hope that, implicit in my examples, you will find reasons for thinking that – unless it should in the future do something radically different from what it has done in the past – science *cannot* do this. But these theses cannot be adequately defended in a brief paper like this one. I have tried only to say enough to open a conversation on the subject.