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Arguments from scale

> No argument I know of for the conclusion that it is irrational to believe that God exists has any force whatever.
>
> (Van Inwagen 1995: 41)

Introduction

The first argument against theism which we consider is a modest science-based argument, and it aims to show that the picture of the universe with which modern science presents us constitutes evidence against the truth of theism. The evidence by itself is not very strong, certainly not overwhelming, but it is nonetheless significant. Traditional theism presents us with a certain picture of God and of his intentions in creating the universe at large, and in creating human beings in particular. In general, if someone hypothesises that there is an agent with a certain nature and a certain set of intentions, then we can form some idea of what the agent is likely to do – in what respect things will be different just in virtue of the hypothesised agent's having that nature, those beliefs, and that intention. If we then discover that the world is not as we have predicted, then we have evidence that the initial hypothesis that there was such an agent is mistaken. The argument thus has the form:

(1) If there is an agent with nature N, beliefs B, and intention I, then he will produce change C in the world.
(2) The world does not display C. So:
(3) There is evidence against the hypothesis that there is an agent with N and I and B.

As an example of the argument at work in an uncontroversial context, consider an updated Robinson Crusoe. Suppose he considers the hypothesis that elsewhere on the island with him is another survivor of the shipwreck similar to Crusoe himself in his physical and mental capacities, including his beliefs, and with the intention of making contact with any other survivors,

such as Crusoe. Even given as vague and impoverished a hypothesis as this, Crusoe can make *some* predictions about what the hypothetical survivor will do. He can formulate in his mind a range of what he might call apt behaviour, and a range of inapt behaviour, which the survivor might display – apt and inapt relative to the intention with which Crusoe has tentatively credited him. It would be apt if, for example, the survivor left visible signs of his presence on the island (marks on trees, scratchings on rocks, carefully arranged pieces of wood or stone). It would be apt if he emitted characteristically human noises (whistling, singing, shouting, etc.). It would be apt if he lit a fire and tried to send smoke signals. These would be apt pieces of behaviour because they are just the sorts of things which a Crusoe-like survivor would do if he were trying to let other possible survivors know of his existence on the island. By contrast, it would not be apt if the hypothetical survivor, for example, found some deep undergrowth and lay in it, quiet and still, for the greater part of each day. It would not be apt if after being in any location on the island, he carefully removed all signs of his presence (footprints, ashes from fires, etc.). And so on. These are not apt ways of realising the intention of making your presence known to another human who might be in the vicinity. They are not the kind of actions which it would be reasonable for Crusoe to expect another survivor to pursue, given the intentions and beliefs with which Crusoe is crediting him.

So, even before starting his empirical investigation of the island, Crusoe can formulate to himself a description of what evidence would help to confirm his initial hypothesis, and what evidence would help to disconfirm it. If he looks hard and carefully for evidence of what we have called apt behaviour, and finds none, that constitutes some evidence against his initial hypothesis that there is another survivor. It is evidence for saying that either there is no actual survivor, or if there is one, the initial hypothesis was wrong about either his capacities or his intentions. In saying that some kinds of behaviour by the hypothetical survivor would be 'inapt', we do not mean that it *absolutely disproves* the initial hypothesis about the survivor's capacities and intentions, but rather that it constitutes *evidence against* the hypothesis. The evidence is defeasible in that it is possible that there is some factor of which Crusoe is unaware which would explain away its initial anti-hypothesis import. (Perhaps the survivor is injured or even unconscious.) But if he does not discover any such factor, he would be justified in concluding that the initial hypothesis is to some degree disconfirmed.

Let us see now how considerations of this kind can be applied on a cosmic scale, and how the nature of the universe as revealed by modern science gives us reason to reject traditional theism.

The argument from scale

Consider, first, the account of God's nature and purposes with which theism presents us. Theism tells us that God is a being who is omnipotent and omniscient, wholly self-sufficient, with no needs, or lacks, or deficiencies of any kind. For reasons that are not entirely clear, God decides to create a universe in which human beings will be the jewel. Although he will have a care for the whole of his creation, God will have an especial care for human beings. He will give these creatures the power of free choice. Exactly what this power is, no one can agree. Some think that it is a capacity the possession of which is incompatible with the truth of determinism; others think that it is a kind of freedom which is compatible with determinism, and which perhaps even requires determinism. Because humans are the jewel of creation, the rest of the universe will be at least not unremittingly hostile or even indifferent to human flourishing. Even if the universe will not make such flourishing immediately and easily and painlessly accessible, it will make it at least accessible in principle for humanity at large. The question then to ask is: given this much information about God and his nature and his purposes, what sort of a universe would you expect to find? Which of all the possible worlds that God could create would you expect him to create, given this much knowledge of his nature and of his overall plan?

As with our example of Robinson Crusoe, it is difficult to answer this question in any great detail. The description of God is so sketchy, and in particular the theistic hypothesis gives us so little information about his aims, that a large number of possible worlds are left equally likely. But among the more likely scenarios is a universe somewhat like the one presented to us in the story of Genesis. In particular, traditional theism would lead you to expect human beings to appear fairly soon after the start of the universe. For, given the central role of humanity, what would be the point of a universe which came into existence and then existed for unimaginable aeons without the presence of the very species that supplied its rationale? You would expect humans to appear after a great many animals, since the animals are subordinate species available for human utilisation, and there would be no point in having humans arrive on the scene needing animals (e.g. as a source of food, or clothing, or companionship) only for them to discover that animals had not yet been created. But equally, you would not expect humans to arrive *very* long after the animals, for what would be the point of a universe existing for aeons full of animals created for humanity's delectation, in the absence of any humans? Further, you would expect the earth to be fairly near the centre of the universe if it had one, or at some similarly significant location if it did not have an actual centre. You would expect the total universe to be not many orders of magnitude greater than the size of the earth. The universe would be on a *human* scale. You would expect that even if there are regions of the created world which are hostile to

human life, and which perhaps are incompatible with it, the greater part of the universe would be accessible to human exploration. If this were not so, what would the point be of God creating it?

These expectations are largely what we find in the Genesis story (or strictly, stories) of creation. There is, then, a logic to the picture of the universe with which the Genesis story presents us: given the initial assumptions about God, his nature, and his intentions, the Genesis universe is pretty much how it would be reasonable for God to proceed. Given the hypothesis of theism and no scientific knowledge, and then asked to construct a picture of the universe and its creation, it is not surprising that the author(s) of Genesis came up with the account which they did. It is not that God would have *had* to proceed in the Genesis way (just as there is not just one kind of behaviour which a possible island survivor would need to produce to confirm Crusoe's initial hypothesis), and it is not that *every* non-Genesis way would be extremely puzzling. There is in fact a wide range of possible universes which God could have created and about which there would not be a puzzle of the form 'But how could a universe like *that* be an expression of a set of intentions like *those*?' Nevertheless, we can still draw a distinction between universes which would be apt, given the initial hypothesis, and universes which would be inapt. The Genesis universe is clearly an apt one, given the theistic hypothesis; but a universe in which (say) most humans could survive only by leading lives of great and endless pain would be a surprising one for God to choose, given the other assumptions we make about him.

The question now to raise is 'Is the universe as it is revealed to us by modern science roughly the sort of universe which we would antecedently expect a God of traditional theism to create? Is it an apt universe, given the admittedly sketchy conception we have of his nature and his intentions?'

The short answer to this is 'No'. In almost every respect, the universe as it is revealed to us by modern science is *hugely* unlike the sort of universe which the traditional thesis would lead us to expect. Although the bare quantitative facts will be familiar to many readers, it is worth repeating them. First, in terms of age: our best estimates are that the universe itself is very roughly 15 billion years, and the Earth is roughly 5 billion years old. How long humans have existed will depend partly on what we take a human to be. But if we take humans to be homo sapiens, and if we take them to be creatures with some sort of language and some sort of social culture, then realistic estimates would allow that they have existed for no more than 100,000 years. So if we imagine the history of the universe represented by a line which is roughly 24 miles long, human life would occupy only the last inch. Or if we imagine this history of the universe represented by a single year, humanity would emerge only in the last few seconds of the last minute of the last hour of the last day of the year. So for something more than 99.999 per cent of the history of the universe, the very creatures which are

meant to be the jewel of creation have been absent from it. The question that at once arises is 'What, given the hypothesis of theism, was the point of this huge discrepancy between the age of the universe and the age of humanity?'. How very inapt a creation of that kind must strike us.

The same story recurs if we turn to the size of the universe. Suppose we take the size of our solar system to be within the expectable parameters of the theistic hypothesis. (This might seem over-generous to theism: why would God need a solar system as big as ours to achieve any of his purposes? Why does he need a sun that is 93 *million* miles from earth? Why wouldn't 93 thousand miles have been enough? Of course the laws of physics would then have had to be different if the sun were to make earth habitable – but as an omnipotent being, God could easily have adjusted the laws of physics. However, let us overlook this and allow that a distance of 93 million miles counts as intelligible – it is intelligible, that is, that a God with the nature and intentions ascribed by traditional theism should create a universe that big.) But of course, we know now that the universe is staggeringly larger than any such intelligible size. The sun is about 8 light minutes from us, the next nearest star is about 4.3 light years, the next nearest galaxy to the Milky Way is scores of light years away. Current findings indicate that the furthest star visible from earth is about 3 billion light years away. In other words, the most distant star is very roughly some 200,000,000,000,000,000 times (two hundred thousand trillion times) as far from us as the sun. This sort of scale to the universe makes no conceivable sense on the theistic hypothesis. Nor should we assume that the most distant visible star is the most distant detectable entity. The furthest galaxy, detectable only by radio telescopes, is reckoned to be about three times further away – 9 billion light years. The possible limits of the universe lie further away still. If the Big Bang occurred about 15 billion years ago, and if the expansion had occurred at the speed of light, the limits of the universe would be about 30 billion light years. Assuming that the expansion was at less than the speed of light, that still leaves the possibility of a universe whose overall size is between 10 and 30 billion light years across (i.e. up to two million trillion miles). Why would a God make it that big?

Further, astronomers tell us that there are about 100 trillion galaxies, each with a billion stars (giving us something of the order of 100,000,000,000,000,000,000,000 stars) (Woodward 2000: 25). It could count as apt if a creator created a universe with one star or perhaps a few dozen or even a few hundred, so that the night sky were as beautiful as we now find it. But what could be the point of the huge superabundance of celestial matter, especially given the fact that the very great majority of humanity will never be aware of most of it? Again, given the theistic hypothesis, it is strikingly inapt.

If we confine our attention to the earth, the same extraordinary inaptness confronts us. The Genesis story presents God's actions as apt in relation to the non-human creatures who share the planet with humans: they all emerge

at about the same time; and all the creatures which surround humanity in that story share a human scale – none are so tiny that it is impossible to detect them by the senses, and none are so huge (e.g. thousands or millions of times larger than humans) as to be unrecognisable as organisms at all. But again, modern science reveals this to be deeply wrong – not just in points of detail, but in almost every major respect. Life has existed on the planet for something like 3 to 3.5 billion years. For roughly half of that time, it has been solely bacterial in form. Given that humans have emerged only in the last 100,000 years, that means that for 99.99 per cent of the history of life on earth, there have been no humans. How very bizarre, given the theistic hypothesis! Further, from a biological point of view 'On any possible or reasonable or fair criterion, bacteria are – and always have been the dominant forms of life on earth' (Gould 1996: 176). In terms of their numbers, their longevity, their ability to exploit the widest variety of habitats, their degree of genetic variation, and even (amazingly, give how tiny they are individually) their total biomass, they outstrip every other kind of life. If God had intended any species to flourish, the obvious candidate for divine favour would be bacteria, not humans.

In short, then, everything that modern science tells us about the size and scale and nature of the universe around us reveals it to be strikingly inapt as an expression of a set of divine intentions of the kind that theism postulates. Let us emphasise that the claim here is not that there is a logical incompatibility between these modern scientific findings and traditional theism. It is not that the findings *disprove* theism. The claim is weaker than that. The claim is only that the findings of modern science *significantly reduce the probability* that theism is true, because the universe is turning out to be very unlike the sort of universe which we would have expected, had theism been true. However, before accepting this conclusion, let us see what responses the theist might make.

Reply 1: modern science is fallible

A first reply would complain that the argument places too much reliance on modern science. This is a mistake, the theist may say, for two reasons. First, all of the figures used in the above arguments are subject to huge margins of uncertainty. For example, although it is customary for the age of the universe to be given as 15 billion years, estimates by wholly reputable experts range between 12 and 18 billion years. Similarly with the other figures for the size of the universe, the amount of matter it contains, the age of life on earth, and so on. All of the figures have a 'back of an envelope' quality to them. They are, the theist may complain, little more than ballpark figures, on which no reliance can be placed. Second, even if the figures could be made more precise, they are derived only from current scientific theories;

and scientific theories, the theist can rightly point out, change constantly. They do not constitute secure knowledge, they are fleeting 'best bet' guesses all of which will probably be rejected in time as science advances. So, in the light of these two objections, the theist might conclude that the argument from scale is built on sand.

The atheist, however, should be unmoved by these objections. She can concede the essence of what they say, but reject the conclusions which the theist draws from them. Take first the uncertainty about the numbers employed. Even if the numbers are inaccurate, even if they are hugely inaccurate, the atheist's argument is largely unaffected. Suppose, for example, that the universe is not 15 billion years old but only one tenth as old or one hundredth or one thousandth as old. That would still leave it at 15 million years old. That may not sound much to modern ears, accustomed to the huge dimensions which cosmology introduces. But it still gives us a universe that is still *massively* inapt on the theistic hypothesis. One way of seeing how this is so, is to reflect on the estimates of the age of the universe provided by those who did not have access to modern science. From Scaliger and Spanheim in the fifteenth and sixteenth centuries, through the famous Ussher discussion of the seventeenth, and on to a number of competent and respectable Victorian scientists, the consensus figure was that the universe began in about 4000 BC. Reflective thinkers clearly believed that a universe with roughly this sort of timescale is what the theistic hypothesis would lead one to expect. That would be an apt universe in terms of age, given theism. So even if current estimates of the age of the universe were out by a factor of a thousand, that would still give us a universe that was roughly 3,000 times older than prescientific theists thought made sense from a theistic point of view. So the power of the argument from scale does not depend on the figures it uses being correct, or even approximately correct. They could be a thousand times too big, and the argument would still be a good one.

The theist's second objection to reliance on science was that science presents us with a set of constantly changing, constantly refuted hypotheses; it does not give us knowledge. This again the atheist can concede, while denying that it carries the implications which the theist supposes. For in the first place, although theories are constantly being superseded, the *general picture* of which they are a transitory part does not fundamentally change. Although it is possible that future estimates of the age or size of the universe may be greater or smaller than those which we now accept, there is no possibility that we will return to the scales which would deprive the argument from scale of its force. There is no possibility that future scientific theories will tell us that the universe started in about 4000 BC. There is no possibility that future theories will tell us that it is only about one million, or ten million, or a hundred million, or a thousand million miles across. In short, there is no possibility that future theories will tell us that the scale of the universe is what it would need to be, to be apt for the theistic hypothesis. So even if the

details of current scientific theorising cannot be taken as secure knowledge, the general picture which science presents can be so taken; and it is that general picture which presents us with a universe inapt for theism.

Reply 2: theism is not committed to what science has disproved

A second natural response would be for the theist to deny that she is committed to what the argument is attacking. The theist might, for example, point out that theism per se has no commitment to any specifically Christian doctrines, even less to the truth of any specifically Biblical claims. To believe in God is not to be committed to any claims about prophets or messiahs, or any empirical or quasi-empirical claims about the age of the universe, the origin of humanity, or even God's special and unique concern for humanity. As a matter of historical fact, the theist may be willing to concede, the vast majority of theists *have* accorded special status to the Bible – but that was in virtue of their acceptance of further claims which were not entailed by theism itself. It is possible to be a theist without being a Jew, or a Christian, or a Moslem. So, whatever may be the relations between Biblical claims on the one hand, and the doctrines of these specific religions on the other, is completely independent of theism. Modern science is incompatible with, for example, a literal reading of Genesis – but that is a problem for Fundamentalist Christians and Jews (the theist may say) and not for theism per se.

There is a sense in which this theistic response is correct and a sense in which it is wrong. It is correct in the sense that it is of course right to say that theism is not committed to the literal truth of the Genesis creation story. But it is wrong to think that the argument from scale makes this assumption. Rather, what the argument from scale assumes is that the theist is committed to the universe being an apt expression of the nature and intention of God, where it was allowed that a wide variety of possible universes would count as apt. The point was only that some universes must count as inapt (such as the universe in which every human being could survive only by leading a life of great and ceaseless pain); and that the universe that modern science reveals falls into the inapt category.

For surely the theist must concede that her assumptions about the nature and purposes of a creator and sustainer of all things carry *some* empirical implications, however vague and however defeasible. She surely does not want to say that the character of the universe would have been just as it is if there had been no God, or if there had been a creator with a very different nature, and with very different intentions. Once the theist concedes that her theistic hypothesis does carry *some* empirical implications, then we can test those empirical implications, and when we find that they are false, carry the disconfirmation back to theism itself.

Even so, the theist may reply, the argument as presented assumes that theism is committed to more than in fact it is. Certainly theism is committed to the view that God is benign, and hence will have a concern with human welfare. But it is not committed to the view that God is concerned only or even specially with humanity. It is not committed, as the Genesis story is, to the claim that life appears only on earth. So it is not committed to there being anything surprising in the fact that the universe is very much bigger than it apparently needs to be for specifically human flourishing; or in the fact that specifically human life has appeared very late in the history of the universe, and indeed very late in the history of life.

This response has some force – but not much. First, it seems that theism *is* committed to certain evaluations on God's part. One of his defining attributes is omniscience; and this suggests that God thinks knowledge is a valuable attribute. (We saw in Chapter 9 how this assumption formed one essential premise in Plantinga's argument against atheistic naturalism.) So, all other things being equal, he will think that species which are capable of knowledge are better than species which are not capable of knowledge. So, given that humans are the supremely knowledge-possessing species as far as we know, theism must think that God will regard them as especially valuable. And in that case, the puzzle for theism returns: why in the three billion year history of life have intelligent, knowledgeable humans existed only for the last 100,000 years? To use the same analogy we used above: if the history of life on earth is represented by a year, humans have appeared only in the final few seconds of the year. Why the delay, given that theism must think that humans are the most valuable species created so far? Who or what has gained, and how, from that colossal delay?

Similar puzzles return if we look out to the stars. The theist could plausibly say that God places no special value on humans, if it were the case that when we scanned the heavens we found it teeming with intelligent life comparable to and perhaps greater than ourselves. But that is exactly what we do not find. What we find are unimaginably huge volumes of space with no sign of intelligent life at all – in fact, no sign of any kind of life. Of course, there *may* be life elsewhere, and conceivably there may also be intelligent life elsewhere. But we have as yet nothing but the barest circumstantial evidence for thinking that there is. So, of everything which we know to exist in the universe, it seems that theism is committed to saying that humans are the most valuable things in creation. They are the nearest to God – they are made in his image.

Reply 3: there *is* a divine purpose in the scale of things

A third theistic response would allow what the second response denied, namely that theism does carry some implications about what the universe

will turn out to be like. But it would deny that the universe as we find it is different from the universe as theism would predict it to be. It would seek to show that the universe as we find it is very much as theism would predict it to be – or at least, even if theism could not have predicted that God would choose to create the universe which he has created, it would try to show *ex post facto* that it is not surprising that God has chosen to create a universe of this kind. How might such an argument go in detail? The theist might point to the fact that God's omniscience is a sign that knowledge is a valuable commodity. So, God would want his creatures to acquire it, so it is explicable that he would create a world of relatively high complexity. The world would be complex enough for the pursuit of knowledge to be a taxing and worthwhile human pursuit, but not so taxing that it was wholly or largely beyond human power. And that is just the degree of complexity which we find the world to have. Cosmology, physics, chemistry, biology and other sciences studying the natural world *are* intellectually challenging: they do require discipline, imagination, and rational thought; but they are to some degree within the compass of a significant and expandable proportion of humanity.

There are, however, several problems which the atheist will find with an *ex post facto* justification such as this. She might point out in the first place that it is a purported justification of *complexity*, rather than of *scale*, and that a universe on a human scale could certainly display plenty of complexity (in such domains as say, mathematics and history, biography and literary criticism – and even philosophy). But second and more importantly, the weakness of all such *ex post* justifications is revealed in the very fact that they are *ex post*. Those early theists (in fact, right up to the nineteenth century) who never thought that God might make such a colossally huge universe knew perfectly well that omniscience was one of God's defining properties, that he was therefore likely to regard knowledge as a good thing, and that he would therefore create a universe in which human knowledge would be attainable, albeit with some effort. Why did it never cross their minds that given these initial assumptions, God might create a universe billions of times bigger and older than their contemporary cosmologists were contemplating? Surely, the atheist will claim, it is because it is simply arbitrary to try and connect any supposed value placed by God on knowledge on the one hand, with the huge dimensions of the universe on the other.

Reply 4: science uses the wrong criterion of significance

A different line of reply for the theist is to challenge the significance of the findings of modern science, at least as they have been used here by the atheist. What the atheist has implicitly been doing (the critic will allege) is asking us to be impressed by sheer size – either temporal or spatial. Thus, the athe-

ist draws our attention to the fact that the universe is very big by human standards; or to the fact that the duration of humanity compared with other life forms is very small; or to the fact that in numbers and variety, lowly species of life like bacteria show much greater richness than humanity. The implication which the atheist wants us to draw is that human beings are insignificant in the cosmic scheme of things. But, the theist will object, this conclusion cannot be drawn. What gives value to something is not how big it is, or how long it has lasted, or whether it exists everywhere, or exists in huge numbers. What gives value to it is a set of qualities such as intelligence, creativity and morality. These are qualities which are found uniquely, or to a unique degree, in human beings. For that reason, no findings about the huge size of the universe or the vast age of the earth, or the biological success of lowly life forms could in any way undermine the importance and significance of human life. Human life would not become more significant if science were to discover that the universe was very much smaller or younger than we now take it to be; nor would it become less significant and less valuable if we were to discover the universe to be larger and older than we now take it to be. In short (the theist will say), the atheist has been over-impressed by big numbers, and ignored the fact that these have no necessary connection with significance or value.

However, the atheist can object that this misrepresents his position. The point about the argument from scale is not that it shows human beings to be unimportant or insignificant, even less that they are unimportant or insignificant *because* they are small in space and time. Rather, the aim of the argument is to show that there is a mismatch between the kind of universe which one would expect, given the theistic conception of God and his purposes, and the kind of universe which modern science reveals to us. The atheist can happily concede all the theist's claims about the value of humanity, and how that is unaffected by the scale of the universe within which it finds itself. The inaptness which the atheist wants to insist on concerns the size of the universe (in space and time) and the position of humanity within the domain of life, given the hypothesised existence and purposes of God. Given that God wants to create beings akin to human beings, with certain features which give them value and significance, why does he set these beings in a universe whose spatio-temporal dimensions are so hugely in excess of what is needed? Why does he precede these human beings with vast multitudes of life forms, most of which simply become extinct, and none of which display any intrinsically admirable features?

Reply 5: God is inscrutable

The final line of reply which the theist might make is to concede that there *is* a prima facie inaptness about the scale of the universe, given the nature and

purposes which theism attributes to God, but to claim that this is wholly inconclusive. We should not presume, the theist may say, to understand *everything* about God's reasons and purposes. We may be unable to see why God should make a universe as big or as old as the one in which we find ourselves, a universe in which so much of what has existed and does now exist has nothing at all to do with humanity – or indeed with life. But that just shows, the theist may say, that God surpasses all human understanding. It is wholly unsurprising, given what theism tells us about God, that we should find him largely inscrutable. Clearly, he will have had his reasons for creating a universe as big and as old as the one we have, and the fact that we have no idea what those reasons are simply reflects our own limited intelligence: it does not discredit the doctrine of theism at all.

But again, the atheist should be unmoved. In the first place, she can legitimately press the theist for some details of what these further divine purposes might be. The point here is that it is not enough for the theist to say 'There *could* be some intention which would render the scale of the universe intelligible to us'. Whether or not we have any grounds for thinking that God has any of these intentions is a further question: the prior question is whether the theist is right to say that there could be some such intentions. If she cannot actually specify what intentions she has in mind, then her claim that there are such intentions is simply frivolous.

Let us assume that the theist can specify what these possible intentions are. The atheist will now ask what grounds there are for thinking that God actually has any of them. She will object that there is no independent evidence for thinking that God *does* have these extra inscrutable purposes, purposes which would explain the otherwise puzzling features of the universe. This extra hypothesis which the theist is forced to adopt is thus entirely ad hoc and unreasonable. And if the only way to prevent considerations of scale from reducing the probability of theism is by adopting a further hypothesis for which there is no evidence, then the theist is unreasonable in adopting that further hypothesis. So, the atheist will conclude, she is either unreasonable if she denies that considerations of scale reduce the probability of theism, or she is unreasonable because in trying to block that charge of unreasonableness, she accepts a hypothesis which there is no reason to accept.

We can think again here of the Crusoe analogy with which we started. Suppose that in spite of careful searching, Crusoe finds no evidence of a survivor (no rock scratchings, no smoke signals, no shouts, whistles, etc.), and infers that this reduces the probability of his initial hypothesis that there was another survivor who was trying to contact him. It then occurs to him that if he attributed some further strange intentions to the hypothetical survivor, then the lack of obvious signs on the island of another person would be exactly what he would expect. Suppose, for example, that the survivor does not simply want to make contact with Crusoe, but to make contact *by using*

a method which would initially lead Crusoe to think that there was no survivor. This would be a strange intention for the survivor to have, and there is no reason for Crusoe to think that the survivor, if there is one, has such an intention. But if there were a survivor, and if he had this strange intention, then the absence of signs on the island of the survivor would precisely be an apt expression of the survivor's strange intention. But we can see that in such a situation, Crusoe would be unreasonable in adding to his initial hypothesis this further unsupported hypothesis, just to make the original hypothesis square with the lack of evidence which he found for the existence of the supposed survivor. And in a similar way, the atheist can insist, the theist who attributes arbitrary further intentions to God, in order to square the hypothesis of God's existence with the scale of the universe, is being unreasonable.

The atheist might also note in passing how an appeal to divine inscrutability appears as a *deus ex machina* argument. Historically, theists have claimed to have a very detailed knowledge of God's intentions and preferences. They have claimed to know, for example, that he does not want humans to consume certain sorts of foods and drink, that he objects to some specific kinds of contraception but not to others, that he has firm views on the cutting or non-cutting of (some) hair of (some) people, that it matters to him on which days of the week people perform certain tasks, and so on. How very strange that God's mind should be so transparent on such small-scale and local issues, and yet opaque on much larger issues.

Conclusion

The upshot of this line of thought, then, is that there is indeed a mismatch between the universe as revealed to us by modern science and the universe which we would expect, given the hypothesis of theism. Utilising the argument schema with which we started, we can say:

(1) If the God of classical theism existed, with the purposes traditionally ascribed to him, then he would create a universe on a human scale, i.e. one that is not unimaginably large, unimaginably old, and in which human beings form an unimaginably tiny part of it, temporally and spatially.
(2) The world does not display a human scale. So:
(3) There is evidence against the hypothesis that the God of classical theism exists with the purposes traditionally ascribed to him.

We need to notice the limited nature of this conclusion. We have already emphasised that it is not a *proof* of the falsity of theism. We can also add that as presented, it does not even claim that theism is *probably* false. For it could quite well be the case that there was evidence against theism, but not

of such a weight as to make the falsity of theism more probable than not. On the other hand, the argument is not negligible. It shows that those who think that science and theism can be kept wholly insulated from each other are mistaken. Science *does* reveal to us unobvious facts about the nature of the universe; the nature of the universe *is* relevant to the question of whether theism is a possible, or a good, or the best explanation of the existence and nature of the universe; and the argument of this chapter shows why the findings of modern science tell against the truth of theism.

Further reading

The argument of this chapter is not one which has been discussed in the philosophical literature about the implications of science for theism – such discussions have focused instead on Big Bang cosmology or the Anthropic Principle (see Chapter 5). But accessible introductions to the science-based assumptions on which the argument in this chapter rests can be found in authors such as Calder (1985), P. Davies (1992), Gribbin (1993) and Ferris (1997).