

ORIGINAL ARTICLE

‘...Or what’s a heaven for?’¹: the problem of unconceived alternatives in science and theology

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Abstract

The problem of unconceived alternatives poses a challenge to believing even our most successful scientific theories. Such theories are typically accepted because they explain the available evidence better than any known rival, but such ‘inference to the best explanation’ cannot reliably guide us to the truth unless the truth is among the set of possibilities we have considered. The problem of unconceived alternatives suggests that we have compelling historical grounds to doubt that this crucial condition is satisfied when we theorize about otherwise inaccessible natural domains. Because the historical evidence suggests there are probably many serious alternatives to our own foundational theories that remain presently unconceived despite being well-confirmed by the evidence we have, we should doubt that some of even our most successful scientific theories are in fact true or even close to the truth. After presenting this problem in its original scientific context, I go on to argue that it poses at least as compelling a challenge to our confidence in any particular conception of God and/or divinity. I draw some fairly radical further theological consequences, and I suggest that the problem may ultimately force us to embrace a far more epistemically humble appraisal of our knowledge of God and divinity itself.

Keywords: scientific realism; unconceived alternatives; inference to the best explanation; abduction; eliminative induction; alternative concepts of God; theism; dogmatism; faith; evidence

Unpacking the problem of unconceived alternatives

For as long as science has proposed theories concerning parts of the natural world that are too small, too large, too far away, too long ago, inconveniently located (e.g. at the centre of the Sun), or otherwise difficult for us to investigate more directly, scientists and philosophers of science have been centrally concerned with the question of scientific realism. On one side of this debate, scientific realists contend that the best explanation (perhaps even the only possible explanation) for the incredible empirical and practical successes of our best scientific theories is that those theories give us at least fairly accurate descriptions of how things actually stand in otherwise inaccessible parts of the natural world. Indeed, scientific realists have memorably suggested that the impressive empirical and practical achievements of our best scientific theories would be *miraculous* if those theories were not at least approximately true (Putnam 1975; see also Kitcher 1993; Psillos 1999 for discussion).

Throughout the course of that same history, however, scientists and philosophers of science have offered compelling reasons to doubt the realist claim that our best scientific theories must be at least approximately true. Such thinkers have often appealed to an argument known as the Pessimistic Induction: they point out that the history of science is itself a graveyard of theories that were at one time the most empirically and practically successful we had but which nonetheless ultimately turned out not to be even approximately true. In Newtonian mechanics, for instance, gravity is a force that massive objects exert on one another, while General Relativity denies the existence of such gravitational forces and holds that gravitational motion instead simply reflects the curvature of space-time itself. If General Relativity is correct, the fundamental description of the world that Newton's mechanics offers is simply false, and the same holds for many other influential scientific theories now abandoned but highly empirically successful in their day, such as the caloric theory of heat, the 19th Century wave theory of light and electromagnetism, Weismann's theory of the germ plasm, and phlogiston chemistry, to name just a few prominent historical examples. Critics of scientific realism point out that even the most empirically successful theories of the past have been ultimately rejected or abandoned with considerable regularity, and they see little reason to think that the most empirically successful theories of the present day will not be similarly replaced as inquiry continues into the future. Such critics of scientific realism are often 'instrumentalists' who hold that our best scientific theories are certainly powerful cognitive tools or instruments that effectively mediate our prediction, intervention, and other practical engagement with particular parts of the world around us (just as Newtonian Mechanics itself still does in many engineering applications), but nonetheless doubt that even the most useful cognitive instruments we have today accurately describe how things stand in otherwise inaccessible natural domains (just as Newtonian mechanics does not and never did). Such instrumentalist critics of scientific realism believe that as scientific inquiry proceeds into the future our own cognitive instruments will ultimately be replaced by competitors enjoying even more impressive forms of empirical and practical success, just as they have been throughout the history of science to date.

Within recent philosophy of science, these competing lines of argument ultimately reached something of a stalemate. Scientific realists emphasized that past scientific theories did not have the same *degrees* of empirical and practical success as present theories, while instrumentalists pointed out that such theories enjoyed just the same *kinds* of successes as contemporary theories without being even approximately true. Instrumentalists ask why these differences in the *degree* of practical or empirical success should convince us that we have finally passed over some threshold ensuring that the approximate truth of our theories really is now the only plausible explanation for that success. After all, the realist's rationale could have been (and was!) enthusiastically applied to many past scientific theories that have since been overturned or abandoned. Given that the history of science consists largely of sequences of *increasingly* successful theories that would ultimately be overturned in favour of even more successful alternatives, why would we suppose that this process of successive replacement has now ended or that contemporary theories must now be at least approximately true, when theories with precisely the same *kinds* of practical and explanatory achievements have so reliably turned out not to be throughout the history of science?

Against this stalemate, the problem of unconceived alternatives offers a distinct and more subtle historical challenge to scientific realism. This challenge begins by noting that the central inferential engine of theoretical science is a form of argument called 'inference to the best explanation' (IBE) or 'abduction' (I will use these terms interchangeably). In such inferences, we start from a given set of theoretical possibilities and then try to find

evidence that supports one of those possibilities over the others; if we manage to eliminate the other theoretical possibilities or render them highly improbable, we embrace the theory best supported by the available evidence as the truth of the matter. We rely constantly on such abductive inferences in ordinary life as well, where they regularly (though not invariably) guide us to the truth. But they can do so reliably only when a particular condition is met: for abduction or IBE to guide us to the truth, the truth must be among the possibilities we are considering in the first place. This crucial condition is usually satisfied in everyday contexts because we are typically able to exhaust the space of serious or plausible candidate explanations we must consider (e.g. these tracks were made by a dog or a wolf, the defective part came from Factory A, B, or C, she loves me or she loves me not, etc.), and even many scientific contexts (e.g. underage drinking has either increased, decreased, or held steady over the last decade). But the problem of unconceived alternatives suggests that this condition is generally not satisfied when we seek to formulate and test fundamental scientific theories.²

One advantage of this newer challenge to scientific realism is that it concerns the theorists rather than the theories of science. The relevant historical pattern here is not that successful scientific theories keep turning out to be false, but instead that scientists and scientific communities keep failing to conceive of any more than a small proportion of the theoretical alternatives well-supported by the evidence available to them. For example, at the time that Newtonian mechanics dominated the physical sciences, General Relativity was not even among the competing theoretical possibilities under consideration, despite the fact that it offers equally convincing explanations for the phenomena that Newtonian mechanics explains. And Newtonian mechanics itself similarly remained unconceived by those who embraced the earlier Cartesian mechanics, Cartesian mechanics was unconceived by those who embraced Aristotelian mechanics, and so on. In fact, it is typical for scientific fields to exhibit this pattern, in which earlier theorists failed to even conceive of fundamental theoretical alternatives that were not only also well-supported by the evidence available to them but would ultimately come to be accepted by future scientists or scientific communities (Stanford 2006, chaps. 3–5). This long history of our failures to conceive of serious and well-confirmed alternative theoretical possibilities when they exist should convince us that contemporary theorists, too, are probably failing to conceive of serious theoretical possibilities that are well-confirmed by the evidence available to us: although today's *theories* are indeed even more empirically and practically successful than their historical predecessors, it is harder to believe that today's *theorists* are substantially better than even the greatest scientific minds of the past at conceiving of the full range of theoretical possibilities well-supported by the evidence available to them. Accordingly, it would be a mistake for us to believe that the best explanation for that evidence *that we have managed to come up with so far* is actually the truth of the matter, or even close to it. If we ourselves are, like our historical predecessors, simply neglecting many serious theoretical possibilities that are well-confirmed by the evidence available to us, then the kinds of abductive inferences characteristic of fundamental scientific theorizing simply cannot reliably guide us to the truth, even though they undoubtedly guide us well in finding and developing successively more powerful conceptual instruments to use in predicting, intervening, and otherwise engaging with otherwise inaccessible domains of nature.

The case for a theological problem of unconceived alternatives

The question to which we now turn is whether and to what extent this problem of unconceived alternatives also constitutes a compelling challenge to believing that existing conception(s) of God or divinity are accurate or even nearly so. In theology, we make

use of abduction or IBE any time that we embrace, support, or defend a particular conception of God by suggesting that it explains or *makes good sense of* the evidence available to us, whether that evidence comes from nature, scripture, revelation, testimony, history, personal experience, or anything else we treat as a source of information or illumination about the nature and/or attributes of God.³ As we noted above, such inferences are fairly reliable in everyday contexts, where we can usually identify most or all of the plausible candidate explanations for some phenomenon before choosing from among them the one that best explains the available evidence as (probably) true. But as we saw in the case of fundamental scientific theorizing, such abductive inferences are unreliable if we simply ignore or have not yet conceived of all of the serious candidate possibilities: IBE or abduction can only guide us to the truth if the truth is among the candidate hypotheses or possibilities we are considering. There are, we noted, substantial reasons for doubting whether this crucial condition is satisfied when we consider fundamental scientific theories about otherwise inaccessible domains of nature. That is, the history of science gives us every reason to think that there are probably theoretical alternatives well-confirmed by the evidence we now have that nonetheless remain presently unconceived, and we should therefore doubt that the results of our own abductive or eliminative inferences about otherwise inaccessible parts of nature are true. The central question now is whether the same is true in theology: should we believe that there are serious candidate conceptions of God or divinity well-supported by the evidence available to us that nonetheless remain presently unconceived? If so, we should doubt that even the *most* well-supported and/or otherwise attractive conception of God or divinity *that we have managed to conceive of so far* actually represents the truth of the matter concerning God's nature or attributes.

It is important to distinguish the problem thus posed by unconceived alternatives from other important questions concerning the inscrutability or unknowability of God. Maimonides and others in the apophatic tradition of negative theology argue that God is ineffable or inconceivable to human beings and that all the knowledge we have of God must therefore be negative and concern only what is *not* true of God. The question of whether humans can form any positive conception of God and the intellectual humility embodied in the apophatic response raise important and serious issues, but they are *not* the issues that most directly concern us here. We are worried instead about whether the most accurate, successful, or adequate conception of God *that we can in fact form* (even if it is purely negative in character) might still be out there waiting for us to discover it. For now we can safely bracket the question of how well it is possible for human beings to know God, keeping our focus instead on whether or not we think that there are probably even more accurate or appealing conceptions of God (of *whatever* sort humans are indeed capable of forming) than those we have considered to this point in our history.

Once we have the question clearly before us, what can we say about the vulnerability of our conception(s) of God in particular to the problem of unconceived alternatives? We might start by recalling that in the scientific case it was not the bare possibility of unconceived alternatives that led us to doubt the truth of the best theoretical explanations we now have. Instead, it was the long history of finding that previous scientists and scientific communities have so reliably failed to conceive of theoretical alternatives well-confirmed by the evidence available to them – it was this history that convinced us that there are probably many further well-supported theoretical alternatives remaining presently unconceived by us. We might ask, then, what light the history of theology can shed on whether we should believe that there are appealing or well-supported conceptions of God that remain presently unconceived.

The history of theology, of course, differs from the history of science in any number of important respects. As Thomas Kuhn (1962) famously argued, for example, the sciences

exhibit a reliable historical pattern in which nearly all scientists in a given field accept a particular foundational theory on the strength of a given body of evidence and seek to develop it further, only to have that foundational consensus eventually repealed and replaced by a later generation of scientists in the same field (a scientific revolution). We do not find this same pattern of consensus followed by revolution in the history of theology. For one thing, in religious matters consensus is rare and heterodoxy is common: although conceptions of God or theological viewpoints can certainly dominate particular communities or societies, they rarely achieve consensus among all or nearly all serious inquirers at any given time. For another, views of God or divinity are not typically challenged or overturned in light of surprising new empirical evidence from observation or experiment.

Despite these important differences, however, the history of theology also reveals a wide range of developments that it seems fair to describe as recognizing previously unconceived fundamental innovations in our conception of God or divinity. The fundamental novelty of any particular example might well be controversial, but there is at least a strong case to be made for any number of developments having inaugurated fundamentally new conceptions of God, including (in just the Christian tradition) monotheism, the God of the New Testament, Thomism, Process Theology, the doctrine of the Trinity, Deism, pantheism, panentheism, henotheism, and the Protestant Reformation. The greater the extent to which we see these or other developments as proposing conceptions of God or divinity that were at the time genuinely novel and previously unconceived, the stronger the reasons the historical record gives us to believe that there are probably further such conceptual novelties yet to be discovered.

This illustrates why the repeated consensus-and-revolution pattern we find in the history of science is not required for the problem of unconceived alternatives to arise and threaten our confidence in either science or theology. In both domains, the regular emergence of previously unconceived alternatives provides equally compelling evidence for the existence of further, presently unconceived alternatives *whether or not* those previously unconceived alternatives disrupted an existing consensus. That is, even when two or more competing theories are live options simultaneously, recognizing a previously unconceived alternative threatens our confidence in *either or both* of those options in just the same way it would threaten our confidence in an existing consensus. It does not matter, then, that humans have never agreed on even a single consensus view of God or divinity. As long as we find novel and previously unconceived conceptions of God reliably emerging throughout the history of theology to attract new advocates, this is all the evidence we need to infer with confidence that there are probably still appealing and well-supported conceptions of God or divinity which remain presently unconceived by us.

In fact, the relative lack of consensus in theology reveals at least one way in which the history of theology seems to provide even stronger evidence of our vulnerability to the problem of unconceived alternatives than does the history of science. There are, of course, many different conceptions of God and/or divinity in different religious traditions around the globe and throughout human history. For most of our recorded history, those religious traditions were relatively isolated from one another. If humans were good at exhausting the space of appealing or well-supported conceptions of God, we would expect to see the same or very similar fundamental conceptions of God or divinity being proposed and debated within each of these theological traditions. What we actually find, of course, is striking heterogeneity across those communities: most if not all distinctive conceptions of God or divinity do not occur in all religious traditions, and many do not appear in more than one. Thus, it seems that (at least until quite recently) each tradition's consideration of the range of possible conceptions of God or divinity has failed to include many if not most of those prominent in other religious traditions. Even when societies or religious traditions have

indeed sought or been forced to confront and consider conceptions of God or divinity from other traditions or cultures, these are typically encounters with quite *different* conceptions than those already considered in their own tradition. Again, if groups of humans were good at exhausting the space of serious theological possibilities, we would expect to see the same set or highly overlapping sets of conceptions of God or the divine arise in each of these theological traditions (because each would be fully or nearly exhausting the same broad range of serious or well-supported possibilities). The fact that each of our existing religious traditions seem to have considered only one small part of the full range of particular conceptions of God or divinity explored by all the others offers further compelling evidence that humans are simply not good at exhausting the range of serious and well-supported theological possibilities and that we should expect to see further genuinely novel and presently unconceived conceptions of God or divinity continue to emerge in the future.

Thus, the reason to worry about unconceived alternatives in theology is not that none of these conceptions of God or divinity have achieved universal acceptance, but instead that different groups of humans seeking to understand God have each conceived of and considered only a small fraction of even the full range of possibilities collectively recognized by other such groups. If our religious traditions have failed to independently discover even most of those conceptions of God or divinity *already conceived* by other traditions, this constitutes compelling evidence that we are no better at exhausting spaces of attractive or appealing possibilities in theology than we are in science, and therefore that we ourselves have probably failed to identify at least some conceptions of God that would be counted as serious theological possibilities and would attract sincere adherents if we had them now or discovered them in the future. The regular and repeated emergence of fundamentally novel conceptions of God or divinity throughout the history of theology is one kind of evidence for this claim (and of course we can now expand this evidence to include the many fundamental novelties appearing historically in other religious traditions along with those we noted earlier from the Christian tradition), while the failure of most religious traditions to even propose or consider many of the conceptions of God embraced by other such traditions provides a different kind of compelling evidence for that same conclusion.

Of course, much of the historical and geographical variation we have considered thus far has also been used to support what is sometimes called the problem of heterogeneity, so it is worth making explicit how and why these challenges differ. Heterogeneity is motivated by the recognition that there is a wide diversity of conflicting conceptions of God held by people in different times and places, provoking concern about which of those particular conceptions (if any) is correct. But the proposed problem of unconceived alternatives instead concerns distinct theological possibilities that have yet to be proposed, embraced, or even imagined by anyone at all. That is, heterogeneity concerns how to respond to the diversity of conceptions of God we already have, while the problem of unconceived alternatives concerns whether we should believe that there are well-supported conceptions of God *beyond* the heterogeneous collection already proposed and whether these further possibilities should undermine our confidence in the accuracy of any particular conception we now hold. To see the depth of this difference, note that even if we answered the challenge from heterogeneity by giving dispositive reasons to think one of the existing conceptions of God is on much stronger evidential footing than all the others, this would do absolutely nothing to relieve the threat posed by presently unconceived alternative conceptions just as well or better confirmed by the evidence we now possess. Similarly, even if we somehow knew that all possible conceptions of God have already been conceived, this would do nothing to relieve the concern posed by the heterogeneity of those existing conceptions for the accuracy of any one of them. Thus, even if we had no evidence in support of unconceived alternatives that was not also evidence supporting heterogeneity, that evidence is being

used here to support a distinct and much more powerful challenge to the accuracy of any and every conception of God we now have.

But in fact, the evidence supporting a serious problem of unconceived alternatives goes well beyond that supporting mere heterogeneity. The fact that many or most of the conceptions of God found in one religious tradition do not appear in other such traditions, for example, is neither needed nor intended to establish the heterogeneity of those conceptions as a whole. It is instead the *particular pattern* in which we find these heterogeneous alternatives appearing historically (with most of the conceptions of God arising within each religious tradition not appearing in most alternative traditions) which suggests that neither individual humans nor the theological traditions in which they operate are good at *exhausting* the space of theological possibilities well-supported by the evidence available at any given time. Recognizing this pattern does not establish any further or additional heterogeneity among the various conflicting conceptions of God or divinity presently held by sincere believers, but it does constitute evidence that many *other* such conceptions probably remain presently unconceived.

We might pause here to consider just how different from existing conceptions of God or divinity those that remain presently unconceived are likely to be. After all, if we think that all presently unconceived alternative conceptions of God are probably quite similar to those we have already considered, differing from them only in minor details, perhaps we need not be too concerned that we have not yet conceived of or considered these minor variants. Unfortunately, the historical and cross-cultural evidence establishing that the problem is also a serious one for theology does not support the view that such differences will be small. We should expect presently unconceived alternatives to include attractive possibilities that are as different from those we have considered as the examples of previously unconceived alternatives we find in the historical and cross-cultural record were from their predecessors and/or counterparts in other cultures. That is, we should expect that among presently unconceived alternative conceptions of God or divinity there will be serious and well-supported possibilities as different from those we now consider as monotheism is from polytheism, or the God of the New Testament is from the God of the Old, or as conceptions of the divine in the Hindu or Buddhist traditions are from those of Christianity. The best guide we have for deciding how different we should expect presently unconceived theological alternatives to be from the possibilities now under consideration is to ask how big those differences have turned out to be in the actual cases that convince us that the problem is a serious one for theology in the first place (cf. Stanford 2018). And the various historical and cross-cultural novelties we have already encountered strongly suggest that we should expect the further conceptions of God and/or divinity that emerge to include many possibilities that are appealing and/or well-supported but nonetheless differ quite radically and fundamentally from those we now have.

This is not to deny, of course, that there will also be many continuities between the distinct conceptions of God thereby generated: indeed, many of the examples introduced earlier as distinct and previously unconceived conceptions of God or divinity have substantial degrees of overlap with their predecessors and with one another. But what really matters for our purposes is the extent of substantial *discontinuity* between these different conceptions. Two conceptions of God or divinity need not be wholly or entirely discontinuous for them to nonetheless diverge in ways that involve substantially distinct or new commitments that seem to their adherents to require a choice between those two conceptions. And it is the reliable and repeated emergence of appealing new conceptions that are *sufficiently* different from extant alternatives to force us into such choices which undergirds the worry that many further alternatives *sufficiently* different from existing conceptions to force us into similar choices about their conflicting commitments remain presently

unconceived. Thus, the fact that there are important forms of continuity between earlier and later conceptions of God (especially within any given religious tradition) and sometimes even across religious traditions does not obviate the fact that these are distinct and *competing* conceptions of God. These conceptions were (and still are) seen by their advocates as involving commitments that diverge substantively from those of alternative conceptions and thus require us to choose between them, despite the fact that they are sometimes also continuous with those extant competitors in any number of important and foundational respects.

Moreover, there is at least one further reason to suspect that the problem of unconceived alternatives may pose an even stronger challenge to our knowledge of God than it does to our knowledge of the inaccessible reaches of nature. In engaging with the problem of unconceived alternatives in science, philosophers of science have argued that it does not pose an equally powerful challenge to all theories or to theories in all scientific fields, because not all theories or fields are equally reliant on merely abductive forms of evidence or on IBE itself (Stanford 2010, 2011). For example, centuries ago the hypothesis of organic fossil origins (that fossils are the remains of once-living organisms) was simply one speculative theoretical possibility among others, and not even the one best supported by the available evidence. This hypothesis itself slowly evolved from a speculative theoretical possibility into an established fact in part through advances in experimental taphonomy, the empirical study of the component processes of fossilization itself. Once we managed to observe in the field and simulate in the lab all of the sequential steps or processes by which organic remains become transformed into fossils, we were no longer in the position of *simply* offering a possible theoretical explanation for what fossil objects are and how they came to exist. Having observed frequently-occurring natural processes reliably *turn* organic remains into fossils, we had a new and more direct kind of evidence for the hypothesis of organic fossil origins itself. The fact that a particular sequence of taphonomic processes will in fact turn organic remains into fossils under a wide range of frequently-occurring natural conditions does not simply constitute one more additional phenomenon (like the locations or material constitutions of those fossils) that any successful theory of fossil origins would need to explain; instead it offers a direct demonstration of the ability of familiar and ubiquitous physical, chemical, biological, and geological processes to actually produce fossils from organic remains. Although it was (and is) certainly still *possible* that some presently unconceived alternative process is in fact responsible for the fossils we find buried within earth and stone, on that assumption we would now need to explain why the taphonomic processes we observe all around us have *failed* to generate fossils in the past and/or where all *those* fossils have gone. Because we have independent reasons to believe that the processes by which organic remains become fossils are ongoing throughout the natural world, we need no longer believe in the organic origin of fossils *just* because that hypothesis would best explain the existence and many characteristics of the fossils we have found, which is to say that we need no longer rely on abduction or IBE *alone* to justify our belief in organic fossil origins.

Our epistemic situation is quite different in many other parts of theoretical science. In domains like particle physics or cosmology, we often lack any such independent routes of epistemic access to the entities and processes about which we theorize. This in turn often prevents us from reducing our vulnerability to the problem of unconceived alternatives by acquiring the sorts of evidence that, as we saw in the case of organic fossil origins, support theories in ways that go beyond abduction or IBE. Cosmologists' belief in dark matter and dark energy has this character. We cannot detect either dark matter or dark energy directly. But when cosmologists found that the universe is expanding far faster than it should be given existing theories (e.g. of gravitation), they postulated the existence of 'dark'

(i.e. otherwise undetectable) energy in just the amount that would be needed to explain this higher rate of expansion – shockingly, by that calculation dark energy represents about 70% of all energy and matter in the universe! But we have no reason to believe that dark energy actually exists except that it would bring the measured rate of expansion of the universe in line with what current theories lead us to expect. That is, the belief in dark energy is grounded *entirely* in abduction or IBE: cosmologists believe in dark energy *simply* because they think it offers the best explanation we have for the observed rate of expansion of the universe. By contrast, as we saw above, we have evidence for the organic origins of fossils that goes far beyond the role it plays in explaining the presence and properties of fossil objects themselves.

Moreover, the availability of such independent routes of epistemic access plays an important further role in constraining the range of serious candidate theoretical possibilities requiring our consideration. In the case of organic fossil origins, our independent routes of epistemic access to the fundamental entities (organisms, fossils, etc.) that are the targets of our theorizing and to the causal processes (disarticulation, mineralization, etc.) they undergo dramatically constrains the range of possible explanations for the empirical phenomena about which we theorize – many possibilities are ruled out simply by what we know independently about the properties of organisms or fossils and their causal interactions with the world. In contrast, in much of fundamental physics we have only scientific theorizing itself to guide us (by way of abduction and IBE) in determining even what basic entities exist and what sorts of interactions between them are possible. That is, in these domains we lack the sort of independent background knowledge of ground rules, fixed points, or fundamental constraints we could use to dramatically restrict the range of serious or plausible theoretical possibilities we must consider or to rule out broad categories of such possibilities in advance. To illustrate, scientists fiercely debated whether light was constituted by a stream of particles or a wave-like motion in a medium for centuries before ultimately adopting the view that light is something that behaves like a stream of particles in some circumstances and like a wave in others. Before experimental findings and fortuitous circumstances forced them to contemplate it, the possibility of such ‘wave/particle duality’ or of light being *both* a wave and a stream of particles was (quite understandably!) not even recognized as one of the candidate theoretical possibilities we might need to consider.

In sum, the problem of unconceived alternatives poses a more serious challenge to some scientific theories than others, because scientific theories differ in the extent to which they are forced to rely on abduction or IBE for evidential support. The challenge is most serious in areas like fundamental physics, where (1) we have few or no independent routes of epistemic access to the targets of our theorizing, and we therefore (2) lack relevant background knowledge constraining the set of serious theoretical possibilities, and are therefore (3) forced to rely primarily or exclusively on abductive evidence and IBE to try to defend or justify our beliefs. It is in such areas that the problem of unconceived alternatives has its greatest force and in which we should be most sceptical that even the very best explanation we have found for the evidence we have is in fact correct or even close to it.

In theology, however, we seem to encounter one of the very few areas of human inquiry in which these evidential challenges are perhaps even more severe and pervasive than they are in fundamental physics. It is hard to imagine an arena in which we know less about the fundamental ontological ground rules, fixed points, or constraints on serious possibilities than we do when we theorize about God. Unless we suppose that our intuitive grasp of what God could be is considerably better than our intuitive grasp of what light could be, we should expect that we are missing a wide range of theoretical possibilities that, like wave/particle duality before the 20th Century, it has simply never occurred to us to consider. Our lack of independent sources of epistemic access to the targets of our theorizing in

theology also prevents us from acquiring the more direct kinds of observational or experimental evidence that support the hypothesis of organic fossil origins independently of abduction or IBE.⁴ As in much of fundamental physics, then, when we theorize about God it seems we must rely exclusively on abduction or IBE to try to infer attributes of God that best *explain* what we find in nature, scripture, revelation, testimony, history, and/or our personal experiences. Accordingly, unless we are prepared to treat some of these sources of knowledge about God dogmatically (see below), it seems that our only *reason* for believing any particular conception of God is that it would explain the evidence we have better than any known alternative. These considerations suggest that the challenge to our knowledge of God raised by the problem of unconceived alternatives is at least as serious or severe as it is in the most challenging scientific cases.

Facing the music (of the spheres)

In the previous section, we explored some reasons to think that the problem of unconceived alternatives presents at least as much of a challenge to believing even our most successful or appealing conception(s) of God and divinity as it does to the truth of some of our most successful and impressive scientific theories. Suppose that we are now convinced that this problem indeed represents a serious challenge to belief in the fundamental accuracy of any particular conception of God we have yet developed. What further theological consequences might follow?

We might start by noting that the likely existence of presently unconceived conceptions of God or divinity also well supported by the evidence we have would seem to gravely threaten the longstanding epistemological project of classical natural theology. Enlightenment natural theologians like John Ray (1691) and William Paley (1802) went beyond purely rational and supposedly *a priori* arguments for the necessity of God's existence, studying the natural world in order to better understand and/or come to know its Creator. From the close examination of particular aspects and features of Creation, these thinkers sought to argue not only for God's existence but also for divine attributes such as omniscience, omnipotence, omnibenevolence, and immutability.⁵ Although this form of natural theology was particularly influential during the Enlightenment, it has experienced something of a contemporary revival centring on arguments from fine-tuning and what is sometimes called 'ramified' natural theology (Holder 2021). But such arguments rely essentially on abduction and IBE in just the way that foundational scientific theories do: the existence of God or the accuracy of a particular conception of God is justified simply by its ability to *explain* salient features of the natural world, history, human experience, and the like. And as we have noted, such inferences to the best explanation (here, to a particular conception of God that explains various features of the natural world) cannot lead us to the truth unless the truth is already among the set of theories (or possible conceptions of God) we have managed to consider. If we think there are probably alternative conceptions of God or divinity that would explain or rationalize the features of Creation we seek to understand just as well or better than those we have now, then we should not believe that even the most successful or explanatorily powerful or well-confirmed conception of God or divinity *that we have managed to come up with so far* is in fact correct or even close to it.

This concession may not seem particularly threatening, as many contemporary theists might well be content to simply abandon natural theology and embrace revealed theology in its place. Unfortunately, the very same challenge seems to threaten virtually *anything* we might treat as a source of evidence supporting our own or any particular conception of God or divinity. Contemporary theists are, for example, more likely to point to claims of scripture (and other testimony), revelation, or personal experience as the foundation for their conception of God or divinity than to natural theology. But unless we treat these sources of

belief dogmatically (see below), it seems that they can only support or recommend any particular conception of God to us on the grounds that the conception in question *best explains* the relevant claims of scripture, the contents of revelations, or the personal experiences in question. But this abductive or explanatory inference is threatened by the problem of unconceived alternatives in just the same way and to just the same extent as the classical project of natural theology. Namely, even if a particular conception of God really does explain the evidence from scripture, revelation, and personal experience better than any extant alternatives, this still offers us only the best explanation *we have yet managed to conceive of* for that evidence. It seems, then, that it is not merely the natural theologian's efforts to infer attributes of God from systematic features of the natural world that runs aground on the problem of unconceived alternatives, but virtually *any* attempt to advocate or defend a particular conception of God or divinity on the grounds that it *best explains* scripture, testimony, history, revelation, personal experience, or any other sort of evidence to which we might appeal. In this way, the problem of unconceived alternatives threatens to undermine nearly any attempt we might make to *defend, rationalize, or justify* the belief in any particular conception of God.

It is, of course, open to us instead to treat scripture, revelation, personal experience, and other putative sources of knowledge concerning the nature and attributes of God dogmatically. That is, rather than embracing or defending a particular conception of God as offering the best explanation of the details of scripture, revelation, or personal experience, we might instead simply insist (on whatever grounds) that scripture or revelation or our own personal experiences offer direct, unmediated, and/or infallible guidance concerning the nature or attributes of God. If we think we have such dogmatic foundations, however, possible unconceived alternative conceptions of God were never a serious problem in the first place: if we know that scripture, revelation, or our personal experiences give us direct and infallible guidance concerning God's nature or attributes, then we know that conception to be accurate no matter what other possible conceptions of God there may or may not be and no matter what they might be like.

Many contemporary theists, however, will find such a thoroughgoing dogmatism profoundly unappealing. Even those who accept *some* theological dogmas tend to think that there is quite a bit more to be said in support or defence of the particular conception of God they embrace than simply announcing the infallibility of the Bible or suggesting that they themselves are infallible interpreters of revelations from God or even of their own personal experiences of God or divinity (cf. fn. 2). Beyond dogmatic appeals to supposedly infallible texts or experiences, many if not most believers embrace the conception of God that they do because they think that conception in particular *explains* salient facts about the world, about their own experiences, and about the beliefs and experiences of others. If the problem of unconceived alternatives forces us to eschew such inferences and instead rest our belief in any particular conception of God *solely* on a dogmatic commitment to particular claims (and/or contentious interpretations) of scripture, revelation, or personal experience, this would come as a profound (and profoundly unwelcome) shock to many contemporary theists.

There is at least one venerable strategy for resisting such religious dogmatism even without abduction or IBE, however, and that is to reject the idea that our conception of God or divinity should be grounded in or depend on evidence at all. Søren Kierkegaard is perhaps the most famous proponent of such 'nonevidentialism', arguing that belief in God (or any particular God) requires what we now call a 'leap of faith' undertaken *without* adequate evidence, justification, rational argument, or even understanding. On this view our commitment to a particular conception of God is not grounded in evidence at all, but instead in the imagination we use to conceive of God in a particular way and the courage

we need to embrace belief in that conception *without* any adequate justification for doing so (Kierkegaard 2006 [1843]).

Kierkegaard's leap of faith is not simply a blind or random jump into the unknown, however. It is instead exemplified by Abraham's willingness to obey God even when commanded to sacrifice his son Isaac, which Kierkegaard sees as demonstrating trust in something *beyond* the ability of reason, evidence, or rational argument to justify or defend, something unintelligible to Abraham himself (requiring suspension of his ethical duty), paradoxical, and even absurd. The idea of a leap of faith is, of course, familiar in the Christian tradition more generally, and most Christians think of their belief in God or aspects of that belief as somehow grounded in faith. But most theists also think of themselves as having good independent reasons for embracing the particular conception of God that they do: again, they see themselves as embracing the conception of God that makes the most sense of what they find in nature, scripture, revelation, personal experience, and elsewhere. So Kierkegaard's nonevidentialist claim is not the anodyne suggestion that Christians must rely on faith but instead the radical claim that authentic and passionate belief in God ultimately requires such a faith to be affirmatively embraced *despite* the unintelligibility and even absurdity of doing so, and that we should reject the very idea that our belief in God should be a coherent response to or determined by evidence in the first place.

Of course, this too would be a radical departure from how most theists see the conception of God that they embrace, and it comes with similarly radical consequences. Perhaps most importantly, if our knowledge of God ultimately rests on faith *rather than* evidence, then it is up to each of us individually to find the conception of God that can authentically induce us to take such a leap of faith, and there is no reason to think (and perhaps considerable reason to doubt) that this conception should match the one we grew up with, or learned about in church or school, or that others hold. For the nonevidentialist, the fact that a particular conception of God is embraced by others neither constitutes evidence in its favour nor recommends it to us no matter who those others are, and each of us must therefore actively work to discover the conception of God (if any!) in which we are capable of authentically reposing such a nonevidentialist faith. If our conception of God is not grounded in evidence at all, then each of us becomes radically free to seek our own God in our own way, but in that case those who believe in God also become quite terrifyingly responsible for doing so *for themselves*, without simply embracing (or even favouring) whatever particular conception of God happens to have been embraced by their parents, teachers, country, community, history, friends, or even their most trusted religious authorities.

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Notes

1. Title quotation from Browning (1855).
2. I will not try here to characterize what makes a scientific theory 'fundamental' (cf. Stanford 2006, 2018). For present purposes I will rely on the illustrative examples of fundamental theories I go on to give later in the paper, including Newtonian mechanics, General Relativity, the hypothesis of organic fossil origins, the theories of dark

matter and dark energy, theories concerning the nature of light, etc. The intended contrast is with scientific theories or hypotheses concerning such questions as whether or not smoking increases one's probability of lung cancer, whether particular chemical compounds have particular functional properties, or whether some particular phenotype became fixed in a population through selection or genetic drift.

3. A theological problem of unconceived alternatives thus arises most starkly for those who see their conception of God as evidentially supported by the ability of that conception to make good sense out of features of their own experience and/or the world around them in this way. We will consider alternative sources of confidence in one's conception of God in the final section.

4. One might suggest instead that some personal experiences of or encounters with God are analogous to perception itself, constituting a 'further route of epistemic access' that informs us of God's nature or attributes more directly than IBE, much like taphonomic observation and experiment do concerning the fate of organic remains on Earth. The characteristic privacy, opacity, and ambiguity of such experiences seem to me to make any such parallel quite dubious (though cf. dogmatism, below).

5. Note the full title of Paley's masterwork: *Natural Theology, Or Evidences of the Existence and Attributes of the Deity*. More recently, when the distinguished population biologist J.B.S. Haldane was asked what he had learned about God through his own study of the natural world, he is said to have replied that the Creator 'must have an inordinate fondness for beetles.' Haldane was not, of course, seeking to advance the cause of natural theology, but his quip nonetheless illustrates just how easily and naturally we treat features of Creation as providing evidence regarding the attributes of their Creator.

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